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CONSTRUCTION AND EQUIPMENT

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CONSTRUCTION

CHITA OBKOM SECRETARY COMMENTS ON CONSTRUCTION PROBLEMS

Moscow SOVETSKAYA ROSSIYA in Russian 27 Sep 80 p 2

[Article by V. Bayev, secretary of the CPSU Chita obkom: "An Area of Concentration for Building"]

[Text] Our era is conducting a count of its perceived achievements. Each year leaves noticeable building traces on the Siberian land. The last decade became a period of particularly active growth for the Chitinskaya oblast's economy. Great changes occurred in the mining and extracting industry, which is traditional for Zabaykal'. Dozens of new industries that were unknown before in areas around here are turning out products in ever increasing amounts, including a motor vehicle assembly plant which puts out trucks for northern use and a worsted cloth combine--the largest enterprise in the textile industry in the eastern part of the country. Reconstruction, expansion and technological re-equipment has been done at the majority of enterprises in many sectors of the national economy.

It is accurate to state that the figures do possess poetic force. During the decade the volume of industrial production increased in the oblast by a factor of two and therefore the feeling of enthusiasm is understandable that is experienced by each person who in reality sees new towns and villages and industrial changes in Zabaykal's appearance behind this growth. The decisions of the 25th CPSU Congress and comrade L. I. Brezhnev's instructions that were expressed by him during his trip through Siberia and the Far East have served as the foundation for such transformations during this five-year plan.

Achievements always bring joy, inspire faith, and give strength to a new, creative working impulse. But the nature of a person's character is such that he is rarely satisfied with what has been achieved. This inner dissatisfaction is nothing other than the personal realization that more may be accomplished. Something similar is often experienced each time during an analysis of the situation in capital construction. Yes, many structures for the most diverse purposes have been erected by the hands of creator-builders, but life convincingly testifies that there are still many serious matters ahead.

When you look at a geological map of Zabaykal' you are automatically struck by the abundance of the various mineral resources which are coming loose in the kray's bowels. There is no small amount of raw materials for producing building materials and they are often located in places that have been lived in for a long time and adjoin transportation arteries. The Ivanovskiy clay deposits for producing bricks, the Karpov silicate sand deposits, and the Adon-Chelonskiy mixed sand and gravel

deposits that could become a large raw material base for reinforced concrete components plants and road-building organizations have been discovered, which are of industrial importance. Perlite--an excellent mineral for heat insulated concrete--was found 12 km from the Bada railroad station. Supplies of gabbro minerals which can be used as a facing material and as a raw material for producing slag cotton were located literally, as they say, by the side of the Peschanka station outside Chita. There are also large deposits of building stone and raw materials suitable for producing mineral dyes in the territory of Zabaykal'.

The waste products of several mining and extracting enterprises are also excellent raw materials for the construction industry. Let's look at just one example. At present, the extraction of metal ores at the Orlov mining enrichment combine is a planned-unprofitable production operation. At the same time high quality raw materials for obtaining gravel and muscovite come from the waste products from which cellular glass, glass modules, long-lasting paints and other materials may be obtained with insignificant additional expenses. The combine's specialists have calculated that organizing constant production would have made the combine a profitable enterprise.

Unfortunately, these rich reserves of natural resources still remain untouched to a considerable degree for the time being. Possessing an impressive raw material base the oblast annually has more than a million tons of cement, practically all of the facing materials, up to 300,000 cubic meters of prefabricated reinforced concrete and components for large panel housing units, roofing and insulating materials and a large amount of lightweight fillers delivered to its construction sites from other rayons of the country. Such a constant dependence on supplies from elsewhere sharply reduces the industrial and technical level of construction. It remains far behind the average indices of neighboring oblasts and the country as a whole. During the past year, for example, completely prefabricated construction comprised 29 percent (and 40 percent for the country) of the total volume of construction and assembly work, and the relative proportion of large panel housing construction was about 25 percent (this index was twice as high for the country). Buildings intended for social purposes are being built by us only from brick.

Why has such a thing happened? During formation of the five-year plans an accelerated development of construction fringe areas were specified for the oblast and a balance was achieved between the growth of capital investments and the production of building materials in that which was theoretically worked out. In this example, we will attempt to examine the leading contract organization in the oblast--the "Chitapromstroy" Association.

Up to this year, this collective had been subordinate to the USSR Ministry of Industrial Construction and its central board in Irkutsk. A major construction base, with the catchword concentration and specialization, was also formed in Irkutskaya oblast. The "Chitapromstroy" Association obtained 20 percent of their prefabricated reinforced concrete, lightweight fillers and an entire series of finishing and other materials from there. These supplies, which even before had not been distinguished by their completeness and regularity, almost stopped with the formation of a new Construction Ministry in the Far East and Zabaykal' rayons. To support what has been

said, I will give the following facts. During the past year and a half the central board, which now became "non-native," shipped Chita workers only 2,300 cubic meters of 34,000 cubic meters of lightweight fillers. Only one-fifth of the prefabricated reinforced concrete that was needed was supplied.

And yet with the formation of a new ministry, it was specified that cooperative supplies were to be maintained in the former amounts. In practice, the faulty principle that "your own shirt is closest to your body" has come into play. If one speaks about the priority approach of several economic administrators toward supplying products beyond the borders of their territory, one must frankly say that it is very far from ethical standards. The matter is aggravated by the fact that such administrators sometimes find support among local party and soviet agencies. While breaking state discipline they try, first of all, to satisfy their own needs there and supply what remains to the others. This is one of the reasons why the oblast received about 80 percent of the available cement and only 63 percent of the roofing materials that were manufactured at the Khabarovsk ruberoid plant during the 7 months of the current year. Disruptions in supplies of sanitary engineering equipment, paint and varnish and other materials are constant.

When justifying the disruptions, plant manufacturers often use original smoke screens--references to unsatisfactory railroad transport operations. In recent years it really is not providing transportation for national economy goods to a complete degree. But this is really related a great deal to the impractical flow of goods. And it is a result of incomplete planning and poor considerations of the development of the infrastructure, including construction bases as well. Here is yet another demonstrative example.

During the 10th Five-Year Plan it was specified that construction was to begin at the Borzinsk cement plant in Chitinskaya oblast. The raw material base is very wealthy and a transportation artery is nearby. The expediency of building it was confirmed using a technical and economic basis and by an examination that was concluded by USSR Gosstroy and was coordinated with USSR Gosplan. Based on calculations, the cost of our cement would have been one-third less than that which is brought in. However, then Gosplan announced that construction of the plant was being put off, and the oblast's demand for cement will be satisfied until 1990 by means of putting capacities into use at operating enterprises in Siberia and the Far East. There is not enough cement already, and what will there be in the future?

Let's return to the construction industry's base, the "Chitapromstroy" Association. During the course of an entire five-year period the USSR Ministry of Industrial Construction under various pretexts did not solve the problem of building a new housing construction combine in Chita, and expanding capacities for woodworking and producing lightweight fillers.

Certainly, the deficit which formed could have been liquidated to some degree but clear intercommunications between sector and territorial planning are required for this. Many ministries in Zabaykal' have their own construction subdivisions. They focus on solving sector problems. For example, transportation construction workers in the oblast have quite a few such problems. And they are becoming greater with each passing year. Nonetheless, the Chitinskaya brick plant, which belongs to the ministry, has not been developing its production capacities for a decade already.

It is also difficult to understand the position of the RSFSR Ministry of the Building Materials Industry. Up to 40 percent of the lime that is obtained is being produced by a primitive method--in outdoor furnaces. The outdated technology has given rise to deficits in personnel. And that, in turn, reduces a plant's capabilities. There is not enough lime for construction work at present. For this reason, capacities were not completely developed for producing silicate brick, leaving a shortfall of 60 million pieces. Oblast party and soviet agencies have repeatedly raised the question before the ministry of building the second phase of the Olovyaninskiy lime plant, but "the cart is here now."

In the outlook for Zabaykal' the construction of large enterprises for ferrous and non-ferrous metallurgy, machine building capacities, and for extracting coal is forecast. The first mobile BAM [Baykal-Amur Main Railroad Line] worker detachments have appeared in the north of the oblast. Laying highways and improving the adjacent territory, and forming the Udokansk industrial center is being changed from the theoretical, long range realm to the category of concrete practical tasks. But their solution will be extremely complicated if development of Zabaykal's construction base is not accelerated. Today, it has by far more than local importance and must become one of the starting areas of concentration for the future work of developing the industrial zone of the Baykal-Amur main railroad line--a most important program for all the people.

9495

CSO: 1821

CONSTRUCTION

LOCAL SOVIETS MUST HELP TO OVERCOME HOUSING CONSTRUCTION LAG

Moscow IZVESTIYA in Russian 3 Oct 80 p 1

[Editorial: "Housing Construction Is a Most Important Task for the Soviets"]

[Text] The Soviet Union is rightly called a country of housewarmings. Never before and nowhere has anyone built as much housing as we have. During the years of Soviet power more than 3½ billion square meters of housing space have been erected and put into operation in our country. These days we are introducing in less than 2 months a number of apartments that is adequate for a city with a population of a million.

Each Soviet family is aware of the fruits of the gigantic scope of housing construction. Thus, from month to month and from year to year, one of the most important points of the program for social development and for raising the people's standard of living that the 25th party congress adopted is being implemented.

In our country the erection of housing is not just a construction problem. It has special meaning because of the fact that it is a vitally important right for a person--the right to housing has been legally secured in the USSR Constitution, and it is guaranteed by the development of the construction industry and by the correct distribution of housing under social control.

"We will strictly require that designers and builders improve the layout of apartments and build durably, with good quality and attractively," said Comrade L. I. Brezhnev at the 25th party congress. "This is how we are striving to solve the housing problem--comprehensively and in integrated fashion."

During the Tenth Five-Year Plan the designers and builders have done much to originate new, well-appointed and attractive city microrayons and comfortable homes in the countryside. During the Tenth Five-Year Plan 50 million persons will have received convenient apartments, which is still another bright testimony of the concern of the Communist Party and the Soviet Government for an increase in the people's welfare.

Advanced collectives of Soviet builders are toiling these days in shock-work fashion in striving to greet the 26th CPSU Congress properly. In Moscow and Leningrad, in Odessa and Yerevan, in Vilnius and Tbilisi the number of housewarmings is rising, and there is an increasing number of housing ensembles of original layout. Thousands of villages are being rebuilt according to master plans with a level of the conveniences that approaches that of urban conditions.

Success always accompanies the one who unremittingly improves industrialized methods of construction, introduces advanced experience in organizing work and management, and approaches the solution of problems in integrated fashion and comprehensively. Among those who are coping satisfactorily with the matter are All-Union Minlesprom [Ministry of Timber and Wood Processing Industry], Mintsvetmet [Ministry of Nonferrous Metallurgy], Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises], Minpromstroy [Ministry of Industrial Construction] and some other ministries. They are successfully carrying out annual plans for state housing construction.

Housing is a special concern of the local soviets. It is difficult to overestimate their role in this matter, which is important for the populace. The ispolkoms of the cities of Volgodonsk, Naberezhnyye Chelny and Ust'-Il'msk are occupied earnestly and with initiative with questions of the timely introduction of housing. The results make themselves felt in the uniform development of both new industrial construction and of facilities for municipal, personal-services, social and cultural purposes.

Khabarovsk has become prettier in recent years. The ispolkom of the city soviet of the people's elected representatives gets no small credit for this. They vigilantly and competently looked after implementation of the plan for rebuilding the city that was worked out by Leningrad's Giprogor [State Institute for Urban Design] and Khabarovsk's Grazhdanproyekt [Institute for the Design of Public Buildings and Housing]. Deputies of city and rayon soviets are organizing duty posts for startup facilities and are monitoring the duration and quality of construction. And now the housing tracts of one of the most attractive cities of the Far East are being expanded--new microrayons that are distinguished by a diversity of apartment houses and by a well-thought out composition have appeared in its northern and southern parts. The city soviet is trying to build in integrated fashion and with quality, so that the people will not simply receive housing but will also live in a harmonious residential environment with the conveniences.

The Soviet of people's deputies is the host on the territory within its jurisdiction. Its executive committee, standing commissions and the people's elected representatives themselves should unremittingly keep their eyes on questions of housing construction. This relates equally to cases where the soviet is the client and to cases where enterprises and organizations act as clients.

Unfortunately, not everywhere does the pace of the erection of housing correspond to our potential. Many ministries fail regularly to carry out plans for state housing construction. But here and there people are held responsible less strictly for failure of plans to introduce housing than for failure to introduce industrial construction. Such an approach to this most important matter is impermissible.

One cannot help but be concerned about the fact that a number of ministries did not carry out the plan for the first 8 months of the year with respect to capital investment volume in state housing construction. This relates particularly to Minlegprom [Ministry of Light Industry], Minmyasomolprom [Ministry of Meat and Dairy Industry], MPS [Ministry of Railways] and Minenergomash [Ministry of Power Machine Building]. The plan fulfillment level was low in the Kirghiz, Latvian and Tajik SSR's, the RSFSR and a number of other republics.

The lag in housing construction must be overcome decisively. Everyone knows that the dispersion of construction-organization capacity over numerous jobs, violation of the construction-time norms, growth in amounts of uncompleted construction, and untimely supply of construction projects with work-force, equipment and material resources prevent the fulfillment of plan tasks. It is necessary to do battle with these chronic hindrances.

The skillful organization of work at construction projects means a lot. Introduction of brigade cost accounting, the Orel experience and the achievements of science and technology promises great advantage. It is important, in order to raise capital investment effectiveness, to use more actively the factors of moral and material incentive and to focus efforts on the decisive sections of the entire work front.

The last lap of the Tenth Five-Year Plan is approaching. Very much, but not everything, has been done. During the remaining months it is necessary to make up for what has been neglected and to prepare a backlog of work for the future so that all the commitments that the construction collectives adopted in honor of the 26th congress will be carried out unconditionally.

11409

CSO: 1821

CONSTRUCTION

BROAD PICTURE PAINTED OF CURRENT STATUS, TASKS OF CAPITAL CONSTRUCTION VIEWED

Moscow EKONOMICHESKAYA GAZETA in Russian No 33, Aug 80 p 9

[Interview with A. D. Dëminov, first deputy chairman of USSR Gosstroy: "Put the Facilities Due for Early Startup into Operation"]

[Text] Construction Workers' Day was observed widely in the country on 10 August. Creative work is being done on the expanses of our motherland on a grand scale. Each week eight new large industrial enterprises go into operation, and each day more than 6,000 apartments are turned over for use. About 12 million people are engaged in construction work. Up to 26,000 primary contracting construction organizations are operating.

In a conversation with the weekly's correspondent, First Deputy Chairman of USSR Gosstroy A. D. Dëminov told how urgent tasks for the capital construction that is to be performed during the final lap of the Tenth Five-Year Plan and for using available reserves to raise the effectiveness and quality of work are being solved.

"The amount of capital investment in the national economy grows from five-year plan to five-year plan. While this was 493 billion rubles during the Ninth Five-Year Plan, it will be about 25 percent more during the current plan.

"According to preliminary data, almost 620 billion rubles' worth of fixed capital, or a third more than during the Ninth Five-Year Plan, will have been put into operation during 1976-1980.

"The party's Central Committee recently carefully analyzed once more the state of affairs at the most important construction projects that are due for early startup during the year. The main task today is to invest a maximum of energy in the timely introduction of all startup facilities into operation.

"The builders are persistently executing the party's contemplated program. During the expired portion of the five-year plan more than 800 large, specially built enterprises were turned over for operation. The most powerful thermal power stations in Europe--the Zaporozhskaya and the Uglegorskaya--were erected. The Nurekskaya GES on the Vakhsha was built a year ahead of schedule, and power units

at the Kurakaya, Chernobyl'skaya and other nuclear-power stations were built a year ahead of schedule. Specially built installations for the primary refining of oil at Kremenchug, Mozyr' and Lisichansk began to yield their first product. Capacity for iron-ore mining in Dnepropetrovskaya and Poltavskaya oblasts increased. Blast furnaces at the Novolipetsk and Kommunar plants and an oxygen-converter complex at Azovstal' were erected. The Baykal-Amur Mainline was being laid down at a rapid pace.

"A spinning combine in Leninakan, a textile factory in Moldavia, and a large number of modern highly mechanized livestock complexes, poultry factories and many other facilities were built ahead of the standard dates. Builders coped successfully with important tasks for Olympiad-80 facilities.

"Capital construction has an important role in the realization of social programs. In the first 4½ years of the five-year plan, housing with a total area of 456 million square meters, or about 13 million well-appointed apartments, were built through all financing sources. This means that housing conditions improved for 46 million people. New general-education schools, kindergartens and nurseries, hospitals, and facilities for cultural and personal-services purposes appeared in cities and settlements. Housing and public-building construction is marked at the modern stage by the use of progressive standard designs with improved layout.

"Nevertheless, there is no cause for complacency of any kind. About half of the construction organizations regularly do not carry out tasks for the introduction of facilities, and they exceed the time norms for their erection. This is reflected negatively in plans for producing raw and other materials, fuel and equipment and in the delivery of consumer goods to the shopping network.

"The 'slow-poke construction trust' has still another consequence that is grave for the economy--unplanned growth in uncompleted construction. It is estimated that there are 23 billion rubles' worth of uncompleted construction work above the norms. This makes a dead weight not simply of financing resources but of actual valuable materials--2.8 million tons of rolled metal, 13 million tons of cement, 7 million cubic meters of lumber. USSR Gosstroy sees that its task is to strictly monitor the concentration of resources and efforts in accordance with measures for improving the economic mechanism in construction.

"Some of the basic prerequisites for raising capital construction effectiveness are a sharp reduction in the number of newly started construction projects and the execution on the broadest scale of the reconstruction and technical reequipping of enterprises. The point is to provide for growth in the industrialization aspect of construction, and to increase systematically the share of equipment in total capital investment, thereby achieving an increase in overall production effectiveness.

"The path to success is the introduction of advanced experience. Cutting the time required to introduce facilities into operation by 15-20 percent will help in further dissemination of the brigade contract.

"In the decree, 'On Socialist Competition for a Proper Greeting for the 26th CPSU Congress,' which the CPSU Central Committee adopted, there are words that are directed straight at builders and installers: '...Introduce the production capacity of startup complexes into operation on time and assimilate it....' In this connection, it is difficult to overstate the importance of introducing the methods

of the better laboring collectives that have successfully fulfilled strenuous commitments. In recent years competition at construction projects has been enriched by such forms as, "The Workers' Relay" and "We Will Build It Ahead of Schedule and We Will Master It Ahead of Schedule," in Rostovskaya Oblast, the movement to carry out the five-year plan task by a brigade with reduced manning in Sverdlovsk, the Orel continuous-planning method and the start-to-finish brigade contract in Tallinn, and many others.

"Now a movement is building up under the motto, "Give the Five-Year Plan a Shockwork Last Lap and the 26th CPSU Congress a Worthy Greeting." Collectives of design-and-survey and scientific-research organizations, where about 174,000 specialists are toiling, have entered the pre-congress competition, having set concrete goals for the technical improvement of capital construction. A topic of special concern during the promotion of competition in honor of the 26th CPSU Congress is the regime for saving supply and equipment resources in every possible way, primarily metal, cement, lumber, fuel and electricity.

"The results of the All-Union competition for the first half of the year were being totaled up everywhere on the eve of Construction Workers' Day. Many advanced collectives of construction workers and of building-materials industry enterprises were awarded challenge red banners and bonuses.

"The measures of the party and the government to improve the economic mechanism have special importance for us, the builders. Much work was promoted in accordance with this document in the ministries and agencies and in construction and installing organizations.

"The main indicators for planning capital construction, beginning with 1981, will be the introduction into operation of production capacity and facilities, the amount of commodity construction product, and growth of labor productivity and profit. It is in accordance with these indicators that the whole economic activity of construction and installing organizations will be evaluated.

"The existing procedure for introducing the achievements of science and technology also is in need of improvement. It should embrace all the stages in creating new technology: forecasting and planning, monitoring and adjustment, reporting and accounting, analysis and evaluation, and economic, material and moral incentives in the sphere of research and design of industrial and construction operations.

"As for construction management, it is necessary primarily to simplify the structure, convert to a two- or three-level scheme of management, develop branch-of-industry specialization and cooperation, and improve the interaction of participants in the construction production line at the interface of interagency relationships.

"Comrade L. I. Brezhnev indicated at the 25th party congress that it is necessary to build rapidly and economically and on a modern technical basis. This requirement is the action program of Soviet builders.

"Power engineers and machinebuilders, miners and metallurgists, chemists and workers in agriculture, and workers of all branches of the national economy await the introduction of new capacity into operation. The duty of all builders is to carry out all of 1980's tasks and to be well prepared for steady work in the first year of the Eleventh Five-Year Plan."

CONSTRUCTION

'STANDARD NET OUTPUT' INDICATOR DUE FOR CONSTRUCTION FIELD

Moscow EKONOMICHESKAYA GAZETA in Russian No 28, Jul 80 p 15

[Article by A. D. Dëminov, first deputy chairman of USSR Gosstroy: "Standard Net Output at Construction Projects"]

[Text] In the system of measures set by the party and government for the improvement of the economic mechanism, USSR Gosstroy, as is known, is charged with accomplishing in 1979-1980, with the participation of the construction ministries, preparation of a standard budget-estimates base for the gradual conversion during the Eleventh Five-Year Plan to planning labor productivity in construction and installing organizations in accordance with net output (standard) or other indicator that reflects changes in labor expenditures more accurately. Net output (standard) will become the basic indicator also in the building-materials industry. How are these tasks being solved?

Problems of Introduction

Much preparatory work is needed for conversion to planning according to NChP [standard net output]. It is necessary first to establish a system of stable standards. This extremely labor-intensive process has been greatly simplified as a result of the publication, "Standard Practices Instructions on the Procedure for Developing and Applying the Net Output (Standard) Indicator to Planning," and some USSR Gosstroy instructional material.

It is very important that personnel be taught economic work and that the level of that work be raised. Enterprises that have converted to NChP planning have exerted no small effort to overcome the so-called "psychological barrier" in economic thought on the part of economic managers. Not for all of them has it proved an easy matter to refrain from the habit of considering tons, cubic meters and gross product volume as the criterion. The force of inertia in some workers has been extraordinarily great. It is necessary that it be overcome in time.

At the same time it is impossible not to consider also the difficulties associated with the use of NChP. For example, it is noted completely correctly that a contradiction still remains between NChP and planning in tons of metal structure and in cubic meters for prefabricated reinforced concrete. On this fact: bonuses are awarded to specialists at enterprises that use NChP only if the plan for realization, for the "gross," is met. Let us note also that planning indicators under the procedure that has been introduced should be brought to the enterprises 1½ months prior to the start of the year, but the products mix--the base of the tasks under NChP--is determined only in March of the plan year. All these discrepancies are the fruit of the transition period or of organizational oversights.

NChP will help to accelerate the introduction of new equipment and enable the variety of products to be constantly improved. In so doing, fulfillment of the products-mix plan and the supplying of complete sets of materials and articles to construction projects will be improved substantially, and the activeness of workers in developing socialist competition, in adopting strenuous counterplans, and in reducing the materials intensiveness of the output will grow.

Many years of experience by Glavmospromstroymaterialy (Main Administration of the Building-Materials Industry of the Moscow City Ispolkom) has proved convincingly that, with planning by NChP, the level of organizational, technical and economics work is raised, cost accounting is strengthened, the microclimate for labor collectives is improved, and labor turnover is decreased.

The Muscovites' Practice

At the start of this year 247 associations and enterprises of the building-materials industry and of the production base for construction were using NChP in planning. The greatest experience had been accumulated at reinforced-concrete prefabricating enterprises of Glavmospromstroymaterialy, which were the first to be converted on a broad scale--in 1976--to planning in accordance with standard net output.

Since the first years of their operation under the new terms, the output of articles of the prescribed products mix has been greatly improved. In 2 years the share of products-mix articles for which the plan task has been carried out rose from 66 to 95 percent, enabling the outfitting of construction projects to be improved and the time required for assembling fully prefabricated buildings to be cut by 10-15 percent.

The new indicator for production volume and labor productivity has helped in mastery of the output of progressive and less materials-intensive structure. In 1976-1979 Glavmospromstroymaterialy reinforced-concrete prefabricating enterprises mastered each year an average of 700 specific new articles, compared with 350-360 prior to conversion to the new terms for planning.

Organization of the output of products of lesser materials intensiveness, the introduction of progressive industrial processes, the improvement of production processes, and strengthening of the savings regime have enabled prefabricated reinforced-concrete enterprises of the main administration to save more than 90,000 tons of cement and 14,000 tons of metal in 4 years. The output per worker in in-kind indicators reached 345 cubic meters of prefabricated reinforced-concrete structure per year, while the industry average for the country was 217 cubic meters.

In considering the positive results of the operation of prefabricated reinforced-concrete enterprises while they used the new indicator, Glavmospromstroymaterialy has since 1978 transferred all other enterprises (wood processing and the production of ceramic articles, quarried materials, synthetics and heat insulation) to planning under standard net output.

Some specialists expressed at first an apprehension that NChP, in eliminating the incentive for enterprises to produce materials-intensive articles, would engender a striving to manufacture articles that are more labor intensive. This

apprehension proved to be without foundation of any kind. Experience has confirmed that enterprise managers are not motivated at all to specially increase expenditures for labor. For them it is much more important in establishing the standard for net output not to pass over any of those operations or expenditures that have a place in, for example, raising the quality of output and in expanding its variety.

At present, in addition to Moscow's enterprises for producing constructional structure, parts and materials, all *minstroyaterialy* [ministries of construction-materials industry] enterprises of the Latvian SSR, *Glavzhelezbeton* [Main Administration for the Prefabricated Reinforced-Concrete Industry] plants of USSR *Minstroyaterialy*, *Voronezhskel'stroykonstruktsiya* [Voronezh Association for the Production of Structure for Rural Construction] of RSFSR *Minmel'stroy* [Ministry of Rural Construction], the *Stroydetal'* [Trust for the Production of Constructional Parts] of Belorussian SSR *Minmel'stroy*, and 11 enterprises of USSR *Minenergo* [Ministry of Power and Electrification], 8 of USSR *Minstroy* [Ministry of Construction] and 29 of USSR *Minmontazhpetsstroy* [Ministry of Installation and Special Construction Work] have been transferred to planning under NChP.

About the Standards

An All-Union conference on questions of price-setting that convened 7-8 April 1980 recommended that USSR Gosplan, USSR Goskomsen [State Committee for Prices] and USSR ministries and agencies pay special attention to the timely preparation and approval of standards for net output, to providing standard-practices supervision over this work, and to accelerating the development of industry standard-practices documents on these questions.

Questions of the improvement of price-setting and the separation of standards for net output from price are the chief questions during the conversion to planning under NChP.

New wholesale prices, as is known, will be introduced as of 1 January 1982. However, is it desirable to lose 1½ years in waiting until the new prices are introduced? It is completely realistic, as experience indicates, to prepare and to convert many enterprises to planning according to standard net output already, in 1980 and 1981.

USSR ministries and Union-republic councils of ministers will define the indicated standards prior to the introduction of the new wholesale prices. The standard, just like the wholesale price, will be established on the basis of industrywide labor expenditure. In this case it will reflect more precisely newly created cost per unit of output in the industry.

A typical detail. During the first stage of NChP introduction it was not possible to exclude completely the influence of "outside" labor, since profitability was determined by the ratio of profit to full production operating costs. Now this question has been solved: not the full production operating cost is taken but the cost of the raw materials, fuel, power, semifinished articles and outfitting articles is deducted.

USSR Goskomsen has authorized *Glavmospromstroyaterialy*, in an experimental procedure that will be conducted over a 2-year period, to establish a standard for

profit per total wages of industrial-production personnel and amortization deductions.

Speed up the Work

Much has already been done to introduce NChP into the industry that makes building materials and constructional structure. Still, it must be noted that the construction ministries and agencies are slow in promoting work that prepares enterprises for conversion to the planning and evaluation of activity according to standard net output, they are organizing poorly the study of the standard-practices documents that have been issued by USSR Gosplan and USSR Gosstroy, and they are using inadequately existing experience in this area.

It is important for ministries and agencies engaged in the production of building materials and constructional structure to prepare enterprises in good time for converting to the planning and evaluation of activity according to standard net output by way of issuing organizational instructions and standard-practices procedures and conducting work in economics. Matters will proceed more successfully if they are more rapid in developing and approving, with the concurrence of USSR Goskomsen, standards for net output in existing wholesale prices for the whole products mix of articles being introduced, as well as the plans and schedules for the conversion.

In April of this year USSR Gosstroy held a seminar-conference of representatives of construction and other ministries that have enterprises that produce structure and materials for construction, concerning the question of preparing for conversion to planning according to the standard net output indicator. Recommendations that set tasks for accelerating this important work were adopted.

Much still remains to be done by USSR Gosstroy subunits in order to promote their activity of providing builders with standards-instruction documentation.

At present, the standard-practice instructions about the procedure for developing and for applying the standard net product indicator to planning with respect to the production base for construction and to the building-materials industry on the basis of USSR Gosplan standard practices are being prepared. The ministries, with the participation of USSR Gosstroy subunits, are developing drafts of standards for net output for the whole products mix of articles and drafts of price lists with breakdown therein of the standard net product for prefabricated reinforced-concrete articles and other constructional structure. It is necessary to push this work forward in every possible way.

NChP in Construction

The process of introducing the NChP indicator in construction is proceeding with somewhat more complexity than in industry. The standard net output indicator is to be broken down in all budget-estimating standards: in consolidated budget-estimated norms and price lists for the construction of buildings and structures, and in individual cost sheets by type of work, as well as in the norms for overhead costs and other expenditures with ceilings in construction. In addition to expenditures for wages and for plan accumulations, expenses for the mechanization of operations (amortization deductions and fuel) will also be considered in the

new indicator in construction. Therefore, it was decided to name this "standard provisional net output."

Since 1973 the Panevezhis Construction Trust and the Vilnius DSk [housing construction combine] of Lithuanian SSR Ministry have been participating in an experimental check of this indicator. Since 1 January 1980 all Lithuanian SSR Ministry of Construction organizations have been included in this experiment.

It is known that where the gross indicator--the volume of construction and installing work--is used, it is possible to adjust plan fulfillment by selecting more or less expensive types of operations. But chasing after an advantageous "gross" inevitably provokes rapid growth of uncompleted construction, with all of its negative consequences for the economy.

With the help of computers, Lithuania's builders have developed 28,000 standards for all types of unitary budget-estimated prices that are in effect in Lithuania. The first results are encouraging. The plans for construction commodity output and for the introduction of housing and production facilities were carried out. Production operating costs of the work were reduced, the goals for profit and labor productivity were met, and, what is very important, running after the "gross" was cut. The technology for doing the work was observed, and machinery utilization was better.

Difficulties also were encountered. At the modern stage in construction, the computations for standard provisional net output are too complicated and labor-intensive. They are being carried out in three stages. First, the indicators for volume of operations in accordance with the budget-estimated cost are established and are broken down for the organizations, and then the set of operations by primary organizations for the established amount is determined, and a recalculation is made for each budget-estimating cost sheet according to the standards for the provisional net product. And, finally, the third stage includes an analysis of the interrelations between output per person according to the budget-estimated cost and according to the tentative net output, and approval of the plan.

The experience of the Lithuanian builders enables many aspects of the planning and the influence of the labor productivity indicators under the new measurement for effectiveness of construction operations to be studied. USSR Gosstroy and USSR Ministry are monitoring the conduct of this experiment and are extending standard-practices assistance in its execution.

The instruction, "On the Composition of the Standard Net Output in Construction," has been prepared. A USSR Gosstroy decree has been issued about the introduction of changes to the instructions on the development of designs and budget-estimates for construction, the refinement of forms for budget-estimating documentation, and the procedure for filling them out. Separation of the NChP from the norms for overhead expenditures, extra costs for winter work, expenditures for temporary buildings and structures and other budget-estimated standards that are applied for making up budget estimates is being done in a centralized procedure. The separation of NChP from the budget-estimating standards that will be put into effect as of 1 January 1984 is called for.

As is known, it is planned to convert to new budget-estimating norms and prices in construction during the Eleventh Five-Year Plan. New budget-estimating norms for construction work and prices for installing equipment are already being developed. Preparation for the collection by the country's republics, krais and oblasts of baseline data about the terms for supplying and hauling local and outside construction materials and articles has been promoted. Interagency commissions are being organized which will be in charge of this work and should provide, within the prescribed periods, for the output of collections of regional budget-estimating prices for all types of construction materials, and for approval of the collections of zonal individual cost sheets. Timely fulfillment of this work will enable acceleration of the large-scale use of the new and more objective indicators for labor productivity in construction.

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CSO: 1821

CONSTRUCTION

PROBLEMS IN HOUSING CONSTRUCTION DISCUSSED

Moscow PRAVDA in Russian 30 Oct 80 p 1

[Article: "A Housing Construction Program"]

[Text] The Soviet Union is called a country of new housing developments. And this is really so; nowhere is so much built as in our country. Cities and villages grow and are improved with each passing year and conveniences for workers grow ever greater. A concern for satisfying their needs is at the center of attention of the Communist Party and state agencies.

Much significance was attached to housing construction during the 10th Five-Year Plan. Capital investments amounting to 1.5 billion rubles greater than was projected were allocated here. During the five-year plan the population will obtain approximately a half billion square meters of living space. Now about 80 percent of urban residents have individual apartments. More than 10 million people will go into new apartments and improve their living conditions during the current year.

"Housing construction," said comrade L. I. Brezhnev at the October (1980) Plenum of the CPSU Central Committee, "is a great social and economic problem. The necessity has been recognized of keeping its present scale during all subsequent years of the 11th Five-Year Plan while simultaneously improving the quality of housing construction."

As was noted at a recent session of the USSR Supreme Soviet, in 1981, the first year of the new five-year plan, it is planned that housing units are to be built with a total area of 108.9 million square meters, somewhat more than this year, by means of all sources of financing. Thus, the average total area of an apartment that will be provided to a single urban dweller will comprise 13 square meters. An increase in the volumes of housing and cultural personal services construction in the village is also envisaged. The construction of housing units in kolkhozes and sovkhoses will be carried out as part of a complex with out-buildings for carrying on personal subsidiary farming.

Housing construction should be more closely coordinated with solving production problems. The pace of developing new rayons in Siberia and the Far East, the development of the RSFSR Nechernozen zone and increasing the interchangeability of the work of operating enterprises will be determined a great deal by the availability of comfortable housing. A total approach must be strictly observed here. This means preschool institutions, cultural, health service, educational, trade, municipal

economy and personal services structures must be put into operation on time. Such an approach arises due to social and economic needs, promotes an efficient development of the national economy and, most importantly, creates favorable conditions for people to live and work.

The newly built structures are located in many cities and villages of the country by taking into consideration the growing needs of their inhabitants. For example, the decorative streets with comfortable houses in the "Yerkenshiliks" sovkhos in Teelinogradskaya oblast gladden the eye. There is a House of Culture and a sports complex in the middle of the populated center. Nearby are personal services enterprises, stores, a children's combine, and a movie theater. And, it is not astonishing that the sovkhos is an advanced farm.

Many new structures are being erected in the country today. Large collectives are working there who at times are associated with various ministries. It should be said that the administrators of several of them forget about the fact that construction workers also need housing and cultural and personal services institutions. The schedule for erecting the high capacity heat and electric station in Ekibastuz was disrupted in its time for this reason. Such facts have occurred at other construction sites. The Central Committee Politburo, said comrade L. I. Brezhnev during a speech at the October Plenum of the CPSU Central Committee, has sternly warned the ministers who have allowed housing construction to seriously lag behind building industrial structures.

Housing construction must constantly be held at the center of attention of the soviets of people's deputies. They are urged to combine the departments' funds which are allocated to erect housing, cultural institutions and personal services enterprises, and to set the tone for the overall development of the regions.

Concern for people, a considerate, sensitive attitude towards a person should permeate the entire style of the work of the party, of soviet and economic agencies and certainly of the trade unions. It cannot be tolerated when workers in planning and economic organizations attempt to cut off appropriations for housing construction under various pretenses.

In addition to this, the maintenance of housing should be given more concern. In recent times, large associations have been formed for operating and repairing them. They have presented themselves in a good light and it is important to accelerate the formation of these new organizations. Life ever more urgently presents the problem of transferring the departments' houses into one hand, the local soviets. Today, one half of the available housing is still under the jurisdiction of various enterprises and institutions, which complicates and increases the cost of their maintenance.

It should not only be the services of the local soviets who concern themselves with the maintenance of housing but the population as well. A patriotic movement is developing on an ever broader scale in the cities and villages whose motto is "We too will take care of our homes." The inhabitants of cities take houses for public maintenance, repair them themselves and prepare for winter. Massive reviews of the improvements and the formation of volunteer repair detachments have become a fine tradition. All of this requires broad support.

Winter is approaching and it is important to prepare our homes for it well. However, in a number of places sluggishness in this matter is being tolerated. In letters to PRAVDA, in particular from Krasnoyarsk, Novosibirsk and Solikamsk, it is reported that the approach of the cold has caught several directors of housing administrations by surprise. The trouble must be eliminated as quickly as possible and deputy groups, house and district committees and soviets of houses and approaches can do much here.

Housing construction must be under the strict control of the party committees. The questions that are related to housing construction and the development of personal and municipal services for workers deserves attention at the party election report meetings and conferences. The business proposals related to these questions must be quickly implemented.

While moving towards its 26th session, our party is striving to more completely satisfy the requests and needs of the Soviet people and to steadily increase their well being. This is one of the important directions of its multifaceted activities.

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CSO: 1821

CONSTRUCTION

PROBLEMS IN FINANCING HOUSING INDUSTRY DISCUSSED

Minsk SOVETSKAYA BELORUSSIYA in Russian 12 Aug 80 p 2

[Article by M. Yarmolovich, candidate of economic sciences, and V. Ivanov, economist: "The Way to the Self-Supporting System"]

[Text] During the past two years a steady growth in the volume of work completed is being observed at the "Minskstroy" combine after many years of lagging behind. A less stable tendency in the growth of construction commodity output is noticeable. The high rates of growth for this index, which had exceeded the increase in construction and installation work by a factor of 2 to 3 turned into a slump in 1979. The plan for construction commodity output was not fulfilled. This is a result, to a significant degree, of the divergence in the rates of growth for both indices which led to a reduction in stockpiling.

Against the background of the projected growth in the volumetric indices the plan for profits and the dynamics of profitability for construction production look unfavorable. During 1976-1977 the unfulfilled portion of the plan for profits comprised, on the average, about 5 million rubles each year. In 1978 profits decreased in comparison with previous years by more than a factor of two.

In actuality the combine was unable to transfer to the self-supporting system. Expenses for self-financing were covered by means of personal working capital. Expenditures exceeded the income which was received and forced it to fall back on the budget in order to continue its activities.

In 1979 the plan for profits was fulfilled basically due to large panel housing construction (80 percent). General construction trusts No 1, 4 and 7 bore 4 million rubles in losses. The profitability of construction production in the combine as a whole remains low--5.1 percent. It does not provide it with the financial resources required for the production and economic activities under self-supporting conditions.

The Minsk construction workers essentially remain with the ministry on a financial subsidy. Such a situation is illegal and it must be corrected. Corrected, after having placed a reliable barrier in the way of losses and uncompensated expenses. For the present the system of measures that is directed towards preventing them is suffering with substantial flaws.

An analysis shows that due to reasons that were dependent on clients, 70.4 million rubles worth of construction commodity output were not turned out during the three years (1976-1978). As a result of this, based on reference calculations, losses comprised 11.3 million rubles. In addition, construction workers suffered considerable losses due to insufficient material and technical resources for the planned program of work, their late delivery, incompleteness and low quality. The unsatisfactory work of subcontract and transportation organizations and the irregular nature of the interrelations with them should also be added to this. The combine's total losses due to the poor work of associates comprised more than 20 million rubles for the three years. At the same time, with the proper organization of the engineering and economic preparations for construction and control, these losses could have been prevented.

A similar situation, where construction organizations suffer losses through the fault of other parties has become a regular phenomenon. The attempts that were undertaken by individual workers to change the above situation were usually unsuccessful. And the reason consists of the fact that overall measures required for protecting the interests of the general contractor during all stages of the transaction cycle are not being carried out by the administration's apparatus, beginning with the pre-design stage, selecting and accepting the site under construction, accepting and checking the design and estimate documents and ending with all participants in construction accepting the obligations which have been set and also controlling their completion.

For example, at a number of construction sites of trusts No 4 and 35 in the "Minskpromstroy" association, a multitude of the hidden obligations of clients were revealed which should have been determined (based on deadlines and totality of execution) when the structures were included in the plan. It turned out that already during the first year of erecting one of the shops at an automobile plant, it was necessary to make provisions for the delivery of equipment for the pumping station and other structures that are located in the construction zone and need to be transported. Transporting very long gas pipeline routes was not provided for at a bakery construction site. Many similar examples may be given.

Thus, the clients' obligations for the structures that are included in the plan are hidden and deadlines and totality of their execution are not determined at the moment that the orders report for the future construction is agreed upon. As a result these documents are often agreed upon without considering how realistic the deadlines are for putting capacities and structures into operation. In essence, a disruption in the start of operations for a portion of the capacities and structures is already inserted into the plan in a hidden form. Therefore, 30 to 50 percent of the total number of capacities and structures that are not put into operation are not turned over annually due to the fault of the client.

The collection and study of information pertaining to future construction is not imposed on the apparatus of the contract organizations' administration. Their representatives do not participate in the work of the commissions that are formed by the clients to decide the territory of the future construction site. Acceptance of the lots for construction from the clients is done, in many cases, without inspecting the utility line routes and places to hook into them. As a result construction organizations bring many of their needs forward when it is too late, often when construction is already going on.

The necessary control has not been imposed over the quality of the design documents that are needed for planning and organizing construction (starting complexes, plans for organizing construction (POS), lists of work volumes, and others). Subcontract organizations as well as divisions and services of the general contractor are not drawn into checking these documents. And yet their participation in this matter is obligatory. During the process of random checks over a number of years, not one plan of organizing construction was uncovered that meets the requirements of the standard documents.

The flaws in engineering and economic preparations negatively affect the quality of the agreements that are concluded in the contract. Composing them usually occurs late which makes it possible for the client to avoid the material responsibility for fulfilling his obligations and, most of all, those whose completion deadlines have run out at the moment that the contracts are concluded.

Precise calculations and control over the deadlines for subcontract organizations to turn over design and estimate documents, to deliver equipment, materials and articles, and to complete work are also not being done. The level of work related to claims is low. A system is lacking for technical and economic calculations of expected expenses and financial results. The size of profits due is not being determined based on calculating expenditures according to structures and comparing them with the estimated cost while considering the actual cost for materials, the systems for paying wages, transportation schemes and tariffs, rates for operating mechanisms and expenses for construction conditions that arise. Today, when starting to erect a structure, builders know neither the size of the profit that is possible nor the size of the losses they will bear. Therefore, they cannot take effective measures to prevent uncompensated expenses. However, compensating losses is only one side of the matter. The most important thing is not to allow a repetition of the situation by which the general contractor's planned tasks fail due to associates not fulfilling their obligations and he suffers great economic losses from this. Altering such a situation will have a considerably larger effect than compensation for losses at the expense of the guilty party.

Most of all it is necessary not to permit the loss of profits and funds for wages and economic incentive due to participants in construction not fulfilling their obligations and as such losses are possible, they should be completely compensated for. For this, the engineering and economic preparations for construction should be placed on a qualitatively new level, which should be conceived of as overall measures which ensure that the interests of the contractor are effectively protected at all stages of the transaction cycle. The qualitative state of construction production is characterized by the very indices of the general contractor's activities.

The Minsk section of the NII [Scientific Research Institute] of the Economics of Construction in USSR Gosstroy outlined an entire program for improving the preparations for forming plans and for control over the fulfillment of the obligations of the participants in construction, which specifies the measures needed to protect the economic interests of the contractor. They have begun to adopt the above program at the "Minskstroy" combine.

The program consists of nine special tasks directed towards a fundamental reorganization of the engineering and economic preparations at the pre-planning stage of construction and control over the pace that the obligations of all associates are fulfilled. The special tasks of the program are directed toward compensating the contractor for the construction expenses that are fixed, adopting a system of steadfastly making those who break the obligations they have taken on materially accountable and also at creating the conditions for forming a more realistic plan for putting structures into operation and turning out construction commodity output.

Accomplishing the special program requires a reorganization of the work of all divisions and services in the combine and trust apparatus. According to the proposed plan it is the very combine and its trust that must serve as a standard for the entire ministry for improving the economic and engineering preparations for construction.

The adoption of the program in its totality will make it possible to eliminate the losses of personal working capital which are being permitted, and to manage without replenishing it every year at the expense of the republic's budget, i.e., to actually transfer to the self-supporting system.

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CSO: 1821

CONSTRUCTION

AUTOMATING PLANNING PROCESSES DISCUSSED

Moscow ARKHITEKTURA SSSR in Russian Aug 80 pp 28-29

[Article by V. Mastachenko, doctor of technical sciences: "Automation and System Problems of Planning"]

[Text] The problem of completely automating planning presents itself most of all as the problem of creating a new technology of planning on the basis of means of automation. The necessity of intensively utilizing the means of automation in planning is determined most of all by the fact that the traditional means of perfecting design and estimate matters have, to a significant degree, been exhausted.

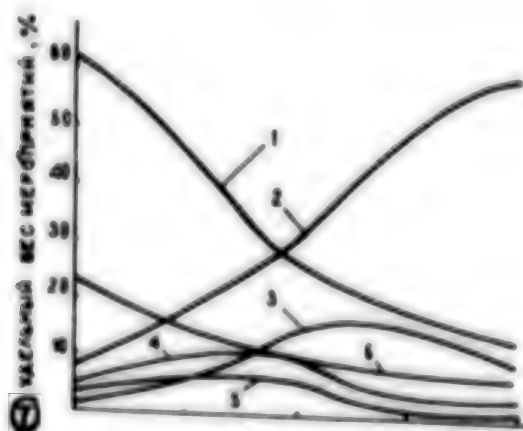
The tendency toward integrating the execution of the planning operations set forth by the program and the operations that are performed by the planning collective (in this particular instance one person) on the basis of unified banks of data, which in essence also opens up possibilities for dialogue or interactive methods of planning, is a characteristic feature of the current stage of work for automating planning. In a number of cases, for example lacking the economic, temporary or scientific prerequisites for the programmed realization of planning procedures, the number of planning procedures that are automatically executed may be equal to zero and the planning collective may simply work with the bank of data (or banks of data) which reduces search time, and time for developing and exchanging information.

The process and object of planning became the subject of research from the moment that the first works on automation appeared. On the basis of the merits of this research the automated processes of planning are being synthesized. In proportion to the development of overall approaches toward automation the fact that the system of planning together with its relationships to other associated systems is becoming the object of study for the new science of automation of planning, is becoming manifest to an ever greater degree.

It stands to reason that those links in the planning systems which are interrelated by the object and process of planning are first of all becoming the objects of research. According to this approach, work is growing in the field of automation, which today has secured a definite conceptual foundation in the form of an automated planning system (SAPR).

Objects of varying complexity and purpose, whose dynamic nature of growth in time and space depend on the needs and possibilities of the national economy, may act as objects of planning.

The following objects, which form a certain hierarchical system, may be examples of such objects: territorial industrial complexes, cities and systems of populated areas; large industrial village complexes and other complexes; especially lengthy utility lines of various types; individual functionally completed sites; buildings and structures; the elementary base for components of buildings and structures. Each of these objects has great structural complexity and diverse properties that are subject to evaluation and control during planning and require specialization by the planning collectives and organizations. The totality of such organizations represents a certain network, the units of which--planning organizations--may, in a certain sense, be considered as sections for processing and producing new planning information. These sections are linked to each other by different sections of the national economy, including management sections.



The dynamics of altering the relative proportion of work being done to bring the process of planning to optimum efficiency in the total capacity of the planners' productivity.

1. bringing the traditional modes and methods of planning to optimum efficiency;
2. completing technical and economic calculations by an EVM [electronic computer];
3. technological preparation for the planning process; 4. perfecting control over the organization of productivity and economic activity; 5. specialization in planning work; 6. social factors of intensifying planning work. 7. Relative proportion of the measures, in percent.

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CONSTRUCTION

LIGHTWEIGHT STRUCTURAL COMPONENTS USED IN CONSTRUCTION

Moscow ARKHITEKTURA SSSR in Russian Aug 80 pp 50-53

[Article by V. Kosogov, director of Design Institute No 2 in USSR Gosstroy, D. Galkin, architectural candidate and B. Aronov, engineer: "Peculiarities of the Architectural Formation of Buildings from Lightweight Structural Components"]

[Text] During recent years the erection of industrial buildings having lightweight enclosure and loadbearing structural components has become quite widespread in native practice. The development of production of new effective materials served as a prerequisite for this. Correlating this know-how is an important task of architectural and construction science and practice at the present time.

The activities of Design Institute No 2 of USSR Gosstroy--the leading institute for completing the architectural and structural portion of the designs for industrial buildings from lightweight metal structural forms--may offer certain interest in such a plan. Work was conducted on a complex level with participation by a number of specialized institutes TsNII SK [The Central Scientific Research Institute of Construction Components], Santekhproyekt, Promtransniiprojekt, TsNIIpromzdaniy [The Central Scientific Research Institute of Industrial Buildings] and other institutes. The first stage presented a problem in designing groups of specialized enterprises for manufacturing combined elements of lightweight loadbearing and enclosure components on flow lines.

The Stroyperlite plant in Mytishchi, which was erected on the grounds of an operating brick plant, was the first experimental structure with lightweight loadbearing and enclosure components. The first phase of new production includes industrial and engineering laboratory buildings, and auxiliary buildings and structures.



The construction perlite plant in Mytishchi. Model. PI-2

The industrial building occupies an area of about 20,000 square meters. The building was designed according to a "flexible" scheme which makes it possible to modernize production in the future. The experimental structural component for the wall enclosure of the building is comprised of grooved aluminum sheets with a heating device from perlite layered concrete slabs with a volumetric mass of 150 kg/m^3 which is approximately 10 times less mass than typical concrete slabs with porous clay filler. During erection of the wall enclosure, a sheet-by-sheet method of assembly for the exterior aluminum sheet was employed, the length of which was determined by the height of the corresponding wall section. This made it possible to obtain a wall enclosure with vertical joints alone. The wall enclosure was partially completed from panels with dimensions of 6×4.2 meters that were filled in with patterned glass. The panels were developed by the institute in collaboration with TsNIIpromzdaniy. Substituting traditional glazing with patterned glass panels made it possible to reduce insulation, glare and heat loss and created tranquil diffused light to a great depth.



Perlite plant in Mytishchi

The use of aluminum sheets and patterned glass aided in qualitatively treating the architectural outline of the building in a new way. In order to impart great expressiveness to the facade a method of contrasts was used: the blank portions of the walls are contrasted against the continuous glazing, the large size glass against the finely divided patterned glass, the ground floor, the walls of the tower of the concrete mixing department and the gates and doors, which are saturated with dark paint, against the light dull surface of the aluminum wall, etc.

Another experimental enterprise is the enclosure components plant in Chelyabinsk. The main building, which defines the architectural outline of the plant, is represented as a rectangle in plan and a single-story four-bay building with a total area of 40,000 square meters. With the aim of reducing assembly time a layout was provided in the design for the wall enclosures to be of panels with dimensions of 6 x 15.3 meters that are fastened to the horizontal elements of the framework. The mass of a panel is 4.85 tons, the consumption of steel for a panel is 3.5 tons, of heating devices, 9 cubic meters. The mass of the enclosure components of a building made from such panels is less than from porous clay filler concrete by a factor of 4 to 4.5. The structural form of the panels was developed by PI-2 [Design Institute-2] with participation by TsNIIPromzdanly and the Chelyabtyazhstroy and Glavyuzhuralstroy trusts.



An enclosure components plant in Chelyabinsk. A portion of construction. PI-2.

The material of the walls determined the architectural approach to the building as well, the facades of which are extremely laconic and distinctive. The expressiveness of the surface finish of the new type of enclosure from grooved metal favored the creation of vertical accents in the surface of the walls in the form of bands of glass and louvered grating for the ventilation shafts, which reduce the monotony of the elongated side facade.

The composite use of lightweight metal structural components, which was stipulated in the design for the Chelyabinsk plant, fixed the total yearly economy at 120,000 rubles.

The expertise which was gained during construction of the plant's main building was disseminated to other sites. The Khar'khov Promstroyniiprojekt and Gipromez used a similar structural component for the wall enclosure on several structures.

During the course of experimental design and construction of the enterprises from lightweight structural components scientific and research developments were made and adopted by TsNIIpromzdaniy, TsNIISK and other organizations, and designing and assembly expertise was accumulated and generalized.

It should be noted that with the adoption of the new structural components great difficulties had to be encountered since specialized enterprises for turning them out did not exist and therefore they were produced by experimental procedures at plants in various sectors of industry. The formation of enterprises for producing shapes from steel and aluminum with protective coverings, lightweight loadbearing structural components and effective heating devices presupposes the capability of adopting them extensively.

The expertise which was acquired confirms the efficiency of lightweight metal structural components, has made it possible to outline an area where they may be used most effectively, and has defined a qualitatively new treatment for the architectural outline of industrial buildings.

With an expansion of the industrial base for manufacturing lightweight metal structural components the necessity arises of standardizing these new classes of articles. And USSR Gosstroy has carried out a number of measures in this direction; standards have been worked out that create the possibility for designers to extensively utilize the lightweight metal structural components that are being turned out by native plants. The "Mosrentgen" and "Tekhnopribor" plants, Gosgrazhdanstroy's central experimental industrial base and a metal components plant were designed on the basis of the standards and catalogues that have been worked out by Design Institute No 2.



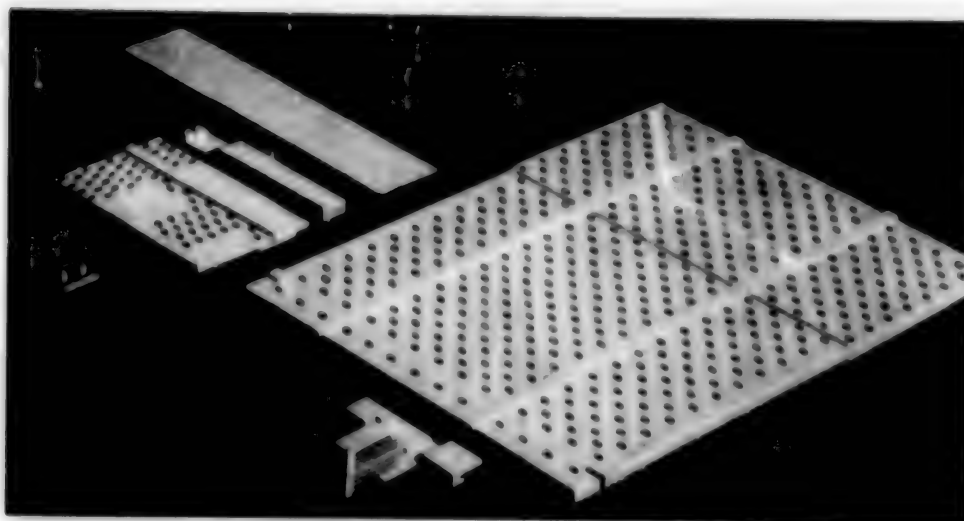
A metal components plant in Vidnoye. Interior of the shop. PI-2



Main building of the "Tekhnopribor" experimental plant in Ramenskoye. A portion. PI-2

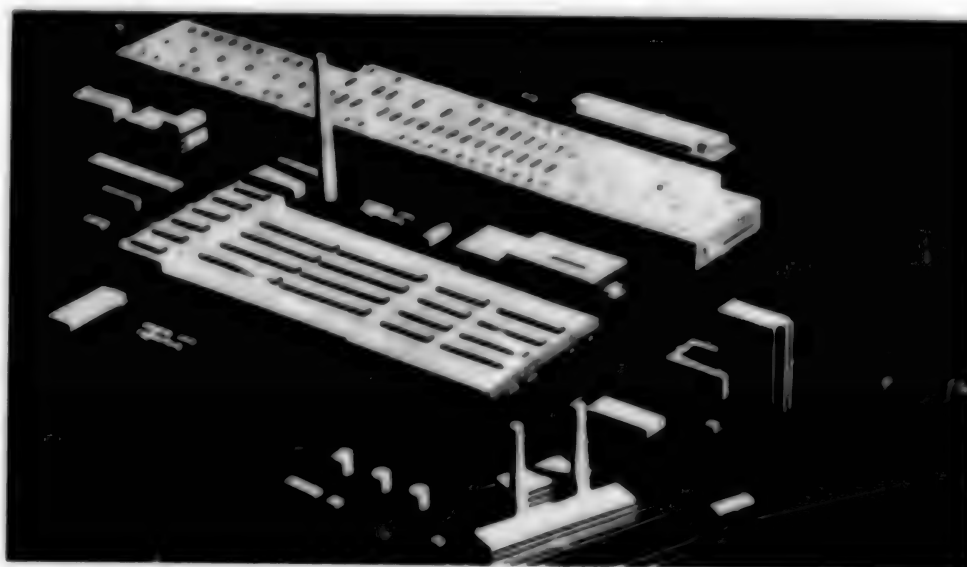


"Tekhnopribor" plant in Ramensk. Interior of the shop. PI-2

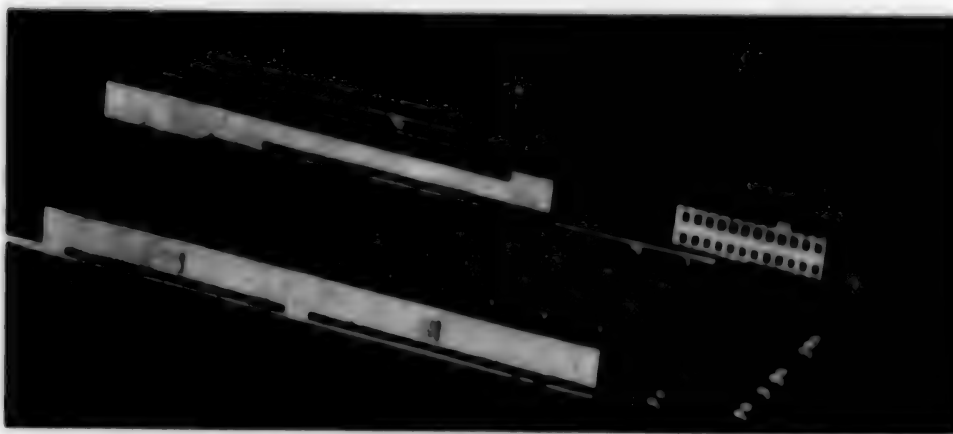


Combine for manufacturing prefabricated collapsible buildings in Sayanogorsk. PI-2

The architectural-structural portion of the plants were worked out by the institutes. The architecture of the main building of the "Mosrentgen" plant reflects the innovativeness of the materials used. The unbroken surfaces of the facades with the contrasting volumetric accents of the air intakes, the hall expanses of the production areas, and the color which was actively used look expressive. The outline of the building of the auxiliary areas is enriched by colored grooved aluminum.



An enclosure components plant in Chelyabinsk. Model. PI-2

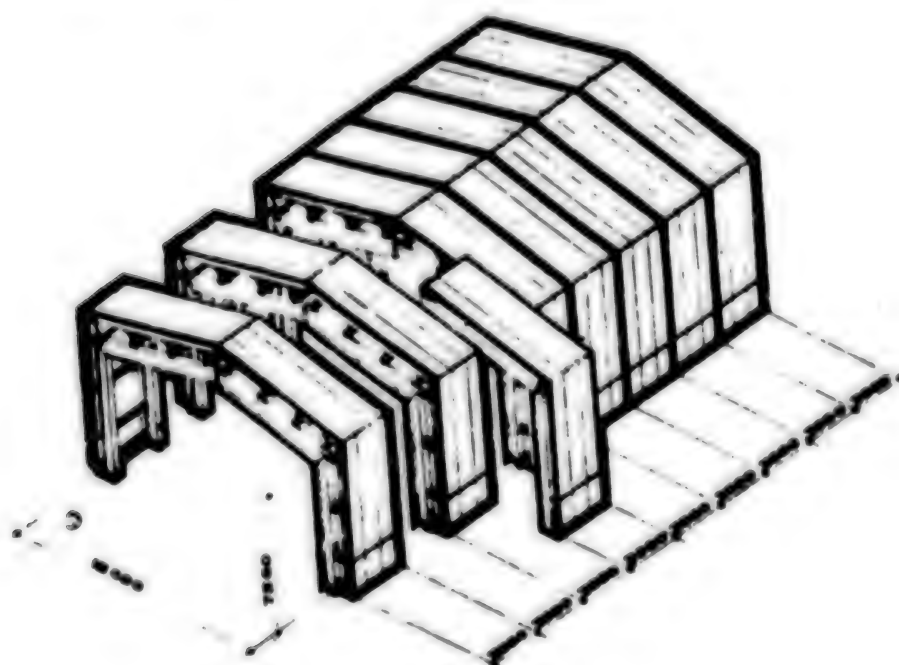
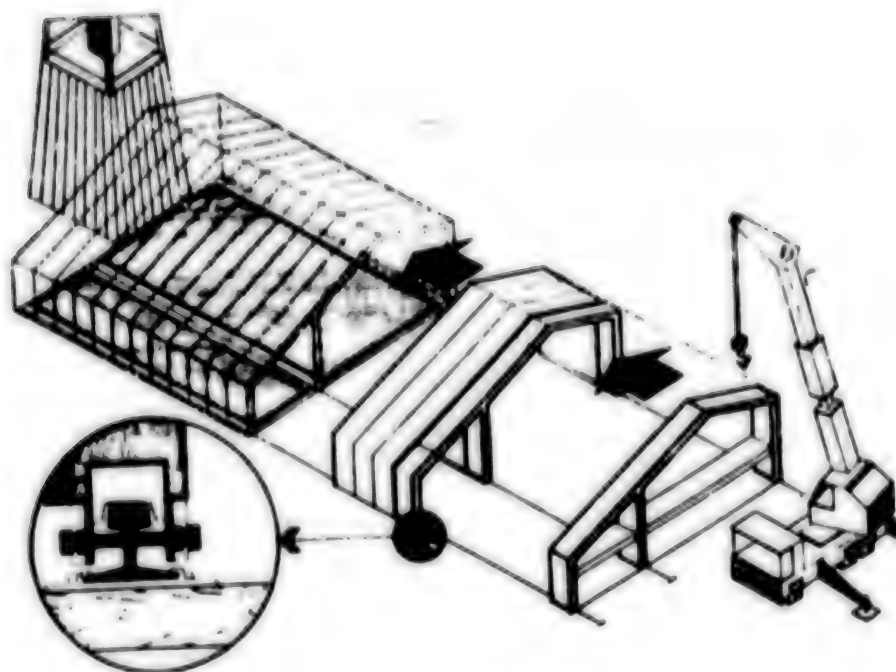


"The Mosrentgen Plant" Model. PI-2



The "Mosrentgen" plant. Interior of the shop. PI-2

The use of modular structural components and complete modular section layouts that are of high factory preparedness and that make it possible to reduce labor expenses at the construction site to a minimum is an important direction in the scientific and technological progress of construction. In this regard the unified large bay shelters for boring equipment is interesting. Three layer "sandwich" type panels with steel sheathing and a middle layer made of foamy polyurethane are used as enclosure components for the shelters. The enclosure components are conceived as panels 3 meters wide which include a frame, and three layered panels for the walls and roof included in them. The roof and wall portions of the panel are connected by a swivel hinge which makes it possible for the panel to be folded up into an assembly package that is convenient to transport in containers.



Large Bay Shelters for Boring Equipment. PI-2

However, forming openings by means of shortened panels or by a method of cutting notches in the blank portions of the walls leads to a weakening of the remaining openings at the edges of the wall sections which must possess sufficient rigidity. A window casing may serve as one of the approaches which will contribute to a strengthening of the panel's rigidity in the critical cross section. It is conceived of as a frame with a rigid outline or any rolled element that is placed along the contour of the opening. The boxed out area, which forms a raised convex frame, spans the ends of the folds or waves at the edges of the opening. As a result the characteristic exterior outline of the contoured surface of the walls are complemented by a new architectural theme that expresses its structural basis--frame out methods.

While preserving the unified dimensions of the panels, which are divisible relative to the spacing of the loadbearing framework, the dimensions of the window openings and the blank sections of the panels are regulated by a 0.6 meter module. Depending on the possible combinations they may have various configurations--horizontal, vertical or square.

A band of glass, which is based on traditional methods of simple and multiple relationships between the spatial sizes, which are characteristic for panel walls, is a logical development of the theme of separate window openings in the approach toward the facades of industrial buildings with lightweight loadbearing and enclosure components. Gates and doors, the standard types of which combine poorly with thin walls, bring about a definite disruption of the clear alternation of the simple and multiple elements of the elongated facades in such cases. Therefore, the adoption of exterior enclosures that are lined with sheet materials requires that new ways of filling in door and gate openings be created simultaneously.

The next, no less important problem consists of actively using a color which has great aesthetic and utilitarian value in the approach to the exterior vertical enclosures. In temperate and northern regions white and gray colors predominate throughout a large part of the year; dark and twilight periods are continuous. Due to the monochromatic background of the environment, the facades of industrial buildings need paint which is well distinguished and intense. Yet such a need has not been widely reflected in native practice. The palette of colors for corrugated aluminum sheets is either colorless or, under the best circumstances, limited to anodizing them with "old bronze." The painting of steel sheets is also represented by few hues--white, gray and blue--which do not meet the conditions of the region under construction.

The approaches to the interiors of industrial buildings with lightweight loadbearing and enclosure components has still not been fully studied. The interior metal sheathing of the production areas, as a rule, are not painted--the dull silver surface of the walls remain a neutral background in relation to the loadbearing structural components, utility lines, equipment, etc.

A subjective evaluation by several specialists who work under "metal" interiors testifies to the definite negative psychological sensations and feelings of "coldness" and "thinness" that are brought about by the material used.

Such a factor as the use of metal that is difficult to obtain for the interior sheathing in three layer lightened panels, which has become widespread to the greatest extent at the present time, is acquiring important significance. In order to eliminate this defect a principally new approach to the structural components of lightened walls has been adopted in recent times. In particular, during construction of the main building of the Stroyperlit combine and the experimental base in the village of Krasnaya Polyana, a two-layered structural form was used, which consists of an exterior aluminum sheet and perlite layered concrete slabs, which simultaneously fulfill the function of a heat insulating layer and absorb the wind load (the weight of 1 m² of wall is 40 kg). Such a structural component makes it possible to carry out the erection of the exterior sheathing and heat insulation layer independently. The perlite layered concrete slabs have dimensions of 1.5 x 3 meters which make it possible to reduce the number of joint connections to a minimum. The variable nature of the approach to the interiors through the use of similar slabs is significantly increasing. The interior surfaces of the walls acquire a dull polished finish with good adhesiveness for various facings and colorings. One of the optimum variations of approaches to the industrial interior in such cases is to combine the surfaces of the wall of perlite layered concrete which are gold-brown in color with the applied elements--the metal slits which span the joints and which form an enlarged grid with a 1.5 x 3 meter cell.

Thus, orientating towards the use of two layered lightened structural wall components opens up the possibility of economizing metal and creating a qualitatively new industrial interior.

In the above article only several questions were touched which are related to the peculiarities of the architectural formation of industrial buildings from lightweight structural components. But these questions have not yet been sufficiently studied and require further creative research and investigation with the goal of raising the aesthetic and technical qualities of industrial architecture to a new level of growth.

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CONSTRUCTION

NEW HOUSING FOR SIBERIA TO WITHSTAND LOW TEMPERATURES

Moscow IZVESTIYA in Russian 21 Sep 80 p 2

[Article by Yu. Sukhoparov, general director of the Vyatskiye Polyany Woodworking Association: "For Northerners"]

[Text] The collective of the "Vyatskiye Polyany" Woodworking Association specializes in turning out so-called container-type dwellings. These are standard typical sections which are widely used by geologists, drillers and loggers in northern and Siberian rayons. It is characteristic that the different variations of such buildings make it possible to quickly form new settlements. A dormitory, club, cafeteria with 50 seats, study center with recreation room, a store with two operating places, an office with a health center and a personal services establishment usually comprise such a settlement. In recent years, more than 100,000 containers were turned out by our association; they are being used everywhere with well-deserved recognition and are in great demand.

The demand for housing is increasing considerably to the degree to which prospecting for and extracting oil and gas and other mineral resources must be done in the most remote, sparsely inhabited northern rayons. It should be, as they say, for northern use, and able to withstand low negative temperatures. Where before we turned out containers that were intended for minus 30 to 40 degrees, a more serious problem of supplying new rayons with dwellings that are able to withstand temperatures of at least 50 degrees below zero stands before us in connection with the increased development of the Western Siberia oil and gas complex.

It must be said that the association's collective is making energetic and comprehensive preparations for transferring to production of the new dwelling. Based on a proposal by workers in the association, a design for a two-apartment house was developed at the "Giprolesprom" Institute in which all of the necessary comforts are considered. We provide an apartment for each family that consists of three rooms; such a house is assembled from eight containers. The total area of the house is 110.2 square meters, the living area is 67.84 square meters. During the past year, 12 such homes were manufactured under experimental procedures and were given to oil and gas industry workers in Tyumen' and to loggers in Arkhangel'sk. The innovation was on display at the "Forest and Logging Machinery-79" exhibition. The first comments are now being received and by considering them we will attempt to improve the technology of the new dwelling and reduce its labor consumption.

Something should particularly be said about the design for a single apartment house. The fact of the matter is that when developing new sparsely inhabited rayons it proves

to be more for the long term. Indeed, a settlement in the tundra or taiga advances ahead of future towns that will appear here following the arrival of permanent operators. And for the time being, the dwelling, in the form of modular section containers completely ensures that watch centers in far off drilling areas, oil fields and taiga logging areas may be organized. People obtain all of the necessary comforts--it has a shower installation, electric heat, water and sewerage. It is entirely possible to utilize the dwelling in a permafrost area. The modular section container is equipped with fine modern furniture. It is of no small importance that the entire internal electrical system is immediately ready at the enterprise and all that remains to be done is to assemble the modular section container, hook it up to the network and celebrate a housewarming.

Such an advanced type of dwelling has been proposed by workers in our association's structural bureau. Certainly, the design was not created immediately. Take, for example, the problem of heat proofing. Before, we used a standard slab as an insulator, which is quite heavy and has other deficiencies. An advanced material--foam sheeting--is specified in the new design as an insulator. Suffice it to say that the weight of a cubic meter of foam sheeting is approximately one-third less than slabs. And this is of no small importance if one keeps in mind that such a house must be delivered over vast distances to the north, often where there are no roads. In addition, foam sheeting does not decay and better withstands dampness, which is of no small importance in the unfavorable conditions of the northern climate.

When manufacturing the new dwelling we will cooperate with nearby enterprises. Thus the Izhevsk experimental machinery plant will supply metal frames for containers, the Novovyatsk combine will provide wood fiber tiles, where a large shop for producing 25 million cubic meters of tiles in a year was recently put into operation.

Certainly the transition to turning out new block section containers requires from us a fundamental reorganization of production. With this goal reconstruction of the enterprise is envisaged.

The new dwelling requires from us other methods that are associated in particular with the fact that labor consumption for the modular section containers is proving to be somewhat higher in connection with using the northern variation. This is why a new shop is envisaged with an area of 14,000 square meters. With the start of operations its production area will grow approximately by a factor of one and a half and flow line production of the modern new dwelling will be introduced. The technical and economic basis for the new shop has already been confirmed and the Kostroma branch of the "Giprolesprom" Institute has begun to design it.

On the whole, 25 million rubles are being provided to be assimilated for reconstruction. But such a scope of future work forces one to speak about a number of unsolved problems today. The first of them is whom to assign the construction work to, in essence our enterprise, which is not in its first youth, needs to be substantially renovated. A good strong contractor is needed who is capable of quickly doing industrial construction. Much specialized assembly work is expected, which is only in qualified subcontractors' power to do. It appears that a mobile mechanized column from the "Kirovlesstroy" Trust must be formed at the site. We, on our part, will undertake to assist the construction workers with the dwelling and yes, on the whole we propose to accomplish all of the housing, cultural and personal services construc-

tion with our own manpower. At the same time construction workers will be able to concentrate their efforts on the main thing--industrial structures. The construction workers' future settlement can be located close to the operators' settlement where there is heat, water and other services.

Why am I speaking about all of this so much detail? The trouble is in the fact that for incomprehensible reasons a decision was approved by the USSR Ministry of Timber and the Woodprocessing Industry, of which the association is a part, concerning doing all reconstruction with only our collective's manpower. But it is perfectly clear that it cannot carry such large volumes of work in a short period of time by the method of using our own resources. Yes, and this method, as practice shows, is good when erecting relatively small structures--basically dwellings, and institutions intended for cultural and personal services purposes. We, I repeat, are not at all abandoning the method of using our own resources; we will develop it, but in the given case it is impossible to place all hopes on it, otherwise reconstruction of the enterprise will inevitably drag on for years.

There is one more important question. It has already been said that we plan to use foam sheeting as a new material. Approximately 50,000 cubic meters a year are required when the new shop is put into operation at full capacity. At present, the supplier of this extremely necessary material has not been determined.

There are quite a few production leaders in the collective at the "Vyatskiye Polyany" Association, such as, for example, our veterans L. Savel'yev, L. Prokhorov, F. Migushov, and D. Churkin, who have already fulfilled their five-year plan tasks. At present, competition is being developed for a fitting greeting to the 26th party congress. Labor initiative has been directed toward making a weighty contribution in the matter of creating a modern dwelling for the subjugators of the north.

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CONSTRUCTION

NEW APPROACHES TO DEVELOPING TOWNS IN SIBERIA DISCUSSED

Moscow STROITEL'NAYA GAZETA in Russian 27 Jul 80 p 3

[Article by A. Kotlovoy, chief engineer at LenZNIIEP [expansion unknown]: "There Will be New Cities"]

[Text] It is necessary for architects who are creating designs for the north to take into consideration the harsh nature and climatic conditions of those vast expanses which have to be developed. For our contemporaries are going there not only to work but also to populate the cold kray that is rich in mineral and energy resources.

If one mentally runs along a line that joins Leningrad with Vladivostok on a map of our homeland, then north of it turns out to be that vast zone on whose territory structures are being erected that have been designed in an old building on the Moyka. It is now 17 years already that LenZNIIEP has been the leading scientific research and design organization for housing and civil construction in the northern regions of the country.

During the current five-year plan scientific research was intensively conducted on a number of very important programs. Among them are the development of new types of residential and public buildings, the creation and introduction of lightweight and lightened structural components from effective materials, an analysis of the physical and mechanical properties of structural components, and physical heat experiments.

Co-workers at the institute have developed and corrected designs for housing units and modular sections and have rendered active technical assistance for introducing them at completely prefabricated housing construction enterprises in Surgut, Nizhnevartovsk, Shimanovsk, Nadym, Yakutsk, Noril'sk, Vorkuta, Magadan, and others. We believe that construction in these rayons is not reduced to the mechanical sum of "northern increases" in structural and planning characteristics: increased thickness for walls, double lobbies, triple-paned windows, increased heights for floors, a more spacious area for housing buildings, etc. With all of this the architecture of the buildings remains the same as in the middle zone but such structures are more expensive. Are such expenses necessary? To a certain degree--yes. But these expenses may be reduced to a certain extent after having provided qualitatively new architecture and having sharply improved the comfort of residents.

Up to the present, small towns in the north were formed according to the old method. Low houses were built, for example, and at the same time utility lines and means of communication for residents were lengthened, complicating the clearing of the territory after snowstorms.

In the meantime, our research shows that northern towns need to be and can be built more compactly with higher density and smaller service areas. The first steps are being made toward the practical realization of such designs.

It is projected that a housing complex with 1,100 apartments will be built in Vorkuta. It will include 14 modular housing sections with apartments for all categories of families and two public modular sections that join together the interior streets and the technical floor with utility lines. For a practical testing of the adopted solutions the Pechorskhakhtostroy combine began construction on a 10-story building with spatially developed apartments and built-in institutions intended for cultural and personal service purposes in the settlement of Vorgashor. Near Vorkuta in the settlement of Gornyataskiy they have begun to erect another two housing units. All of these buildings are "detached" from the complex which has already been mentioned and their construction will, by its nature, be a dress rehearsal before the large-scale work on the giant building for mining engineers.

An experimental design for a settlement at the "Udachnaya" diamond deposits is interesting. Here there are four lines of modular section buildings which are joined by interior streets and form a highly original housing structure. A system of children's institutions is included in it (from kindergarten-nurseries to high schools) and a public center that was done in the form of general purpose modular sections with versatile layouts that lend themselves to various alterations. Along with this the configuration of the buildings reduce heat loss and provide protection against wind for the adjoining lots.

The first phase of the new town is being erected by workers at the Vilyuygesstroy based on a design by our colleagues from Yakutniiproalmaz. Eight 5-story buildings with an area of 60,000 square meters for apartments have already taken shape in reality, the only portion of a town with covered streets to date in the USSR.

Our collective solves quite a few problems when determining the types of base, expeditionary and watch settlements. Here, structures with steel frameworks that are faced with aluminum must be widely used together with large panel buildings. The construction of such a DSK [Housing Construction Combine], which is calculated to turn out 400,000 square meters of housing in a year, has been begun in Sayanogorsk.

Work on a series of small-story housing and public buildings from aluminum panels with effective fillers arouses special interest among us and clients--geologists, construction workers and operators. The first steps toward realizing them have already been taken. And the time is not so far away when whole settlements made of aluminum structural components will appear.

Recently tests of the characteristics of prefabricated-collapseable houses have been successfully completed. Packed in containers, such a house is assembled on a wooden frame in one shift without using underground mechanisms. The six-sided structure from streamlined forms is faced with three layer panels and can accommodate four residents, having provided them with suitable comfort. Such houses are easily formed into modular sections and can serve as the basis for creating housing and public

buildings that are being developed. Documents are being prepared by us for a small house for reindeer breeders--a type of nomadic tent. It will also provide northerners with the necessary comfort.

Along with the development of designs for housing and public buildings the institute's collective was entrusted with the overall planning for a number of towns. Many of them are associated with the Western Siberian oil and gas complex. Among the more distinguished and difficult tasks for us is developing Novyy Urengoy. Dozens of housing units will appear in this young, rapidly growing center during the 11th Five-Year Plan as well as a whole range of structures for education, culture, health services, municipal economy and the service sphere. Workers in Glavleningradstroy will already turn over the first 30,000 square meters of housing here during the current year. And then another 50,000 square meters will be erected annually. The links between us and oil industry workers in Surgut, where a branch of the institute was formed, are long standing and solid. Unfortunately, progress is still very modest. In particular, we are paying little attention to questions of urban housing construction and the architectural formation of Surgut and most of all its center. The institute has been subjected to just criticism for this by Gosgrazhdanstroy. At present, the collective is taking measures to correct the situation.

It is possible that we also deserved reproach for Nadym, where LenZNIIEP is the general contractor. But life with all its persuasiveness convincingly shows that stable work on a design is impossible without clear cooperation with the client that is built on mutual responsibility. As a rule the USSR Ministry of the Gas Industry inaugurates financing for the current year in Nadym only in May-June when our work must be completed. It must be done with an advance payment at our responsibility and risk and by counting on the next payment. In this regard, we turned to the ministry, but no changes for the better occurred. The situation is even more complicated by the fact that in Nadym we are transferring to two-year planning and this requires an increase in the volumes of planned work and an acceleration of its pace. Therefore, the problem of timely financing is now becoming particularly urgent.

I will note that we have dozens of undisciplined clients. This is why we are placing much hope on the measures that are specified by the party and government's decree concerning an improvement in the economic mechanism. Work on the five-year plans with divisions by years, invariable title lists of buildings and calculations for the structure as a whole--all of this should promote precise high quality work by planners.

The institute's collective is applying all of its efforts toward fulfilling the tasks on time and with good quality. One of the more tested ways of solving difficult problems is to form complete creative design and research brigades. Such a collective, for example, has been formed and for the third year is engaged in developing, researching and introducing into experimental design structural approaches to completely prefabricated earthquake-proof housing units for construction in rayons covered by permafrost. We hope that such an approach guarantees us success for solving other problems as well.

CONSTRUCTION

NEW METHOD OF DETERMINING LOCATION OF HEAT LOSS DEVELOPED

Moscow MOSKOVSKAYA PRAVDA in Russian 30 Aug 80 p 3

[Article: "A House's Heat Portrait"]

[Text] Wednesday 27 August. Development of the technology to use a heat sensitive film during the search for defects in the walls of houses has been completed at the Moscow Scientific Research and Design Institute for the Housing Economy.

Heat...On a cold day it escapes at times from an apartment through chinks in the stairway framework and cracks in the walls which are formed as a result of houses settling and separating--moisture is sucked into them and the house freezes. It is necessary, of course, to make repairs and to attempt to more or less hermetically seal the doors and windows but it is not possible to break into the walls and, by guesswork, search for the cracks and chinks into which the moisture has seeped. The "frost" and "wind" that gets through must be compensated for by excessive energy for heat which, in the capital alone, costs tens of millions of rubles per year. Yet, just the same, this is more economical than to break into the walls in search of defects. Is it really true that this problem cannot be solved in some other way?

We addressed this question to the Moscow Scientific Research and Design Institute for the Housing Economy. The answer which followed was unanimous: "It can."

"What's more we have already developed an original method of discovering defects, and, beginning next year, it will be tested in practice," relates L. M. Klyukin, scientific director on this topic. "The solution was based on using liquid crystals. Their property of changing color depending on the temperature has been widely used, even up to the present time, principally in medicine. We want to use it in discovering defects in structural wall components and their joints in housing units.

"In practice this happens thus: the liquid crystals react to heat sources. With their help, special photographs are made and it is very clearly visible where exactly these sources are, and, more accurately, the places where there are leaks and cracks and such. Heat programs are obtained on which the "sick" places are distinguished by color and discovering them no longer presents great difficulty. Such an examination of houses is done by means of a heat viewer and the results may be simultaneously observed on a television screen. The difficulties that arise at this stage of work

are associated with the appearance of strange spots on it, which are obtained due to the varying condition of the surface. The heat programs that are obtained by using liquid crystals will help to distinguish them. Comparing these pictures with the aid of an EVM [electronic computer] easily eliminates the strange reactions and establishes the types of defects and their pattern in the housing unit. We are engaged with this right now, studying and checking in practice the results of the experiment in the laboratory."

....The laboratory proved to be not exactly typical. Small little houses, exact copies of modular housing units, with the same layout for the apartments and a miniature heating system. The exact difference between the interior and exterior temperatures, which is created by using a thermostat, is maintained. And the little house would look exactly like a toy house if the odd coloring of the liquid crystal film had not been placed on it.

"The method of doing research on models," L. M. Klyukin continues his story, "has many advantages. First of all, an experimental defect may be made, placed in any spot, and the reaction may be checked. Secondly, there is a possibility of not only observing the "symptoms" but, also, having opened the model, of studying their causes. The observations which were made here will simplify the practical use of heat viewers in diagnosing dwellings in the future.

"After the method is clearly developed on the models, it will be possible to photograph a real building by using television techniques and to quickly and accurately determine the pattern, type and degree of defects and trouble."

Work on the methodology to determine defects is coming close to completion. It is projected that an automated system for working out heat programs will be adopted next year, that is working them out with the aid of electronic computing techniques, and consequently the broad practical use of an original development by scientists and engineers in the capital will become a reality.

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CONSTRUCTION

USING EARTHQUAKE-RESISTANT HOUSING IN AREAS WITH HIGH SEISMIC ACTIVITY

Frunze SOVETSKAYA KIRGIZIYA in Russian 29 Oct 80 p 4

[Article by V. Dotsenko: "An Actual Interview; the House and the Earthquake"]

[Text] "Kirgizgiprostroy" is the leading institute in the Kirgizskaya SSR Gosstroy which specializes in designing housing and civil structures and developing planning designs and buildings for cities and settlements for the health resort zone at Lake Issyk Kul' and for rayons with high levels of seismic activity. Much attention is being given to developing designs for constructing individual houses here. Recently a book was published by the "Kyrgyzstan" publishing house called "How to Build Earthquake-Resistant Houses" which was prepared by specialists at the institute. The authors--V. Anistratov, director of the "Kirgizgiprostroy" Institute and V. Starodubtsev, chief of the institute's technical division--summarizing many years of experience at restoring and constructing buildings in rayons with higher levels of seismic activity, relate in popular form the regulations for building private homes.

"The problem of the resistance of individual buildings to earthquakes has disturbed us for a long time," says Viktor Savvich Starodubtsev, "but how can the methods and regulations for building be extensively explained? So we decided to prepare a manual which could be of assistance for the individual builder. The materials that were published in the pages of SOVETSKAYA KIRGIZIYA, which called for earthquake-resistant construction to be propagandized and explained as extensively as possible in the village, served as a basis for this.

"The territory of our republic is situated in a zone with high seismic activity. During the last nine years alone, earthquakes in the six to nine range occurred in the Issyk-Kul'skaya and Oshskaya oblasts, which caused damages to the national economy. Private homes especially suffered.

"An analysis of the consequences of the earthquake shows," continues Starodubtsev, "that to a large degree those residential houses were subject to collapse which were erected without taking into consideration the standards and regulations for construction in seismically active rayons and, on the other hand, all of the buildings in whose designs anti-earthquake measures were specified and implemented, withstood the test of the elements.

"Attention should be given to the fact that construction in Kirgiziya is complicated due to the diverse nature of the climatic conditions, the features of the topography and the height above sea level. The ground conditions also are heterogeneous: in mountainous rayons it is rocky and clastic, it is filled with loam and silt in the Talasskaya and partially in the Chuyskaya valleys, it is sagging and filled with loess in Oshskaya oblast, there is permafrost in the high mountain rayons. These features must be taken into consideration when selecting the design and construction of houses.

"I will note that the use of local building materials is of no small importance for the permanence of construction. For example, in the republic we may use with success wild reed and gualyak--a clay mixture with straw; fibrolite--wood chips mixed with cement; and also earth concrete and pressboard made of reeds. It was no coincidence that an analysis of the consequences of the Dzhanalash-Tyupskiy earthquake in 1978 showed that the houses which were built by using reeds, gualyak, and fibrolite and cotton slag blocks bore the 7 and 8 range jolts well.

"In conclusion, it may be said that construction know-how in seismically active rayons of the republic has made it possible to specify the basic regulations for completing construction work. All of this lay as the basis for the manual 'How to Build Earthquake-Resistant Houses.'"

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CONSTRUCTION

LENINGRAD FLOOD CONTROL MEASURES

Riga SOVETSKAYA LATVIYA in Russian 11, 14, 16 Oct 80

[Article by special correspondent Ye. Mazhan: "Letters from Leningrad; A Barrier in the Gulf"]

[11 Oct 80 p 4 Part I: "In the Path of Cyclones"]

[Text] Leningrad and flooding--these two words are closely linked to each other by nature's whims. But after not so much time passes the hero city will not be subjected to the water element. A year ago the party and government approved a decree concerning the erection of structures for shielding Leningrad from flooding. A special correspondent of SOVETSKAYA LATVIYA visited the city on the Neva and became acquainted with how this important problem is being solved.

In all, three months had passed since the day St. Petersburg was founded when a great flood occurred. During the night of 30-31 August, 1703, the water rose to two hundred plus centimeters and carried away the logs and building materials that had been prepared for constructing the fortress of Peter and Paul like splinters. Since that time the Neva has perpetrated its destructive forays on the city more than 300 times. During the life of Peter the First alone there were nine floods. In September 1706 he wrote to Menshikov: "It is the third day that so much water has overcome us by a west north westerly, they say unlike never before. It was more than 21 inches (more than a half meter--Ye. M.) above the floor in my mansions and one could freely get about the city in boats."

The Neva showed its stern character particularly forcefully in November 1824. The famous lines from Pushkin's "The Bronze Horseman" are well known to many:

The weather grew more furious,
The Neva swelled and roared,
Gurgling and swirling like a cauldron,
And suddenly, like a beast enraged,
Pounced on the city....

By noon two thirds of the city was submerged and water got into everything. Palace Square, together with the Neva, looked like a single future lake. The walls of many buildings crumpled and all of the floating bridges were destroyed. In two hours the water reached its greatest height--410 centimeters above the Survey Institute's normal level. Then it began to recede. In the city 324 houses were

completely destroyed and 3,257 distinct structures were damaged. The losses comprised about 20 million rubles--an enormous sum for those times.

A century later the Neva's waters again exceeded the normal level by 369 centimeters. However, this time the damages were significantly less--the fundamental difference of the socialist conditions had to have had an effect. People opposed the violence of the elements with discipline and organization. Leningrad was aided by provisions, monetary resources, pumps and engines for pumping out the water. After just a week, 78 of the 105 flooded enterprises were in operation.

My interlocutor, Aleksandr Petrovich Zaytsev, director of the Leningrad Hydrometeorological Observatory, well remembers the flood of 1955 when the water rose to 282 centimeters above normal level. All of the streets were flooded on Vasil'evskiy Island. On that day, English sailors, who had come to Leningrad on a courtesy visit, saw the "Bronze Horseman" ballet where the flooding had been portrayed on the stage. In the evening they saw it in nature.

The weather bureau had predicted this elemental calamity in advance and the damages were relatively small. An emergency commission for battling floods operated very effectively.

What brings them about? For a long time it was thought that the chief culprit of all the trouble was the wind. But it, if one can express it thus, was only an accomplice in the crime. Even gale winds acting alone are capable of only raising the water level in the Neva delta by one and a half to two meters. There is another cause. Leningrad is located on low flat shores and is situated in the path of cyclones' movements. These shifting vortical air systems, in the center of which low pressure zones are formed, pass over the sea as if they are drawing great masses of water as a whole and pulling them behind them towards the throat of the Gulf of Finland. But here on land the cyclone dissipates and the water runs everywhere in the form of a so-called long wave. Forming in the Baltic it swiftly reaches Leningrad by way of the gulf. Its height, not large initially, increases sharply in proportion to its nearness to the more narrow and small place. The long wave, whipped up by the winds that are driven together, gets from Tallinn to Leningrad in six hours. If the water level is, for example, 70 centimeters above normal, then this index will increase by more than a factor of three.

And the Neva, which is a channel that joins Lake Ladago with the Gulf of Finland's Neva inlet, cannot bear such powerful pressure. The length of this river is 74 km in all. Yet it collects water from a vast territory somewhat less than the area of Italy. By the amount of water flowing through it, the Neva occupies fifth place among the rivers in the European portion of the USSR behind the Volga, Pechora, Kama, and Severnaya Dvina. The Don and Dnepr collect water from an area three times as large, although the Neva carries as much water as they take together. Therefore, during a flood it wells up, literally, to its eyes and if one stands near a parapet it is not possible to remain dry.

Regular measurements of the water level in the Neva were already begun by a directive from Peter I. For this purpose a depth gauge--a metal rod with dual graduations--was used. Aleksandr Petrovich Zaytsev showed me several water measuring depth rods referenced to the normal level. One was placed in the Neva itself not

far from the administration building. If it is submerged a second one that is attached to the parapet on the bank gives a reading. The third is located at 100 meters near a little house in which a person who studies the sea works. And the last one is in the basement of the administration building itself. Yes, meteorologists based on Vasil'evskiy Island also get wet themselves sometimes.

Floods occur in Leningrad most of all in the fall. This is a time of constant tension for weather forecasters. A signal comes from Tallinn and immediately the so-called Bel'skiy method--a former colleague in the administration and now deceased--is used. He already developed it during the prewar years. This method makes it possible to confidently predict the magnitude of the water rise six hours before the flood. A storm warning is given earlier, at times more than 24 hours in advance. A commission was created under the Leningrad city ispolkom to combat disasters from the elements. The chief of the Northwest Territorial Administration for Hydrometeorology and Control of the Natural Environment, Semen Pavlovich Koznov, is a member of it. The commission notifies all of the enterprises that are threatened by the flood by an alarm. Every one of them has their own level mark. And while some, depending on the given prognosis, continue to work calmly, others bring materials and equipment to a higher place, install barriers and take other measures.

Although early storm warnings do help to reduce losses that are caused by the long wave, just the same, the average annual damage from flooding in Leningrad is great. And under certain conditions specialists believe that the water rise could reach 5 meters and even somewhat higher. The deliverance of Leningrad from the violence of the water element is not only an economic problem but also a social one. It has acquired special significance in conjunction with the working out and realization of a general plan for developing the city on the Neva. The maritime facade of the city is being formed on an almost 25 km section of embankment. In order to carry out this task the embankment strip needs to be strengthened. Soil is being deposited from the bottom of the gulf into the lower and marshy regions of the area--they must be raised to a level of 2.5 to 3 meters. By the beginning of the next century the total area of alluvial territory should comprise 5,000 hectares. It is planned that about 20 million square meters of housing are to be built on it. These regions and the old section of the city with its cultural and material value must be protected against the onslaught of the water element.

This is exactly why the CPSU Central Committee and USSR Council of Ministers adopted the decree "Concerning the Erection of Structures to Shield Leningrad from Flooding" on 2 August 1979. It has been designated that they will be put into use in 1990.

Work on the design for the structures, in essence, began 30 years ago. We will relate how this gigantic structure will be represented in the next letters.

[14 Oct 80 p 4, Part II: "The Western Version"]

[Text] Peter I already attempted to tame the Neva. He conceived of raising the area with the city's buildings to 10 feet (approximately 305 centimeters) above the normal level. If this had been successfully done then it would not have now been necessary to erect barrier structures. But at that time such a task was not realistic.

In 1714 an edict was issued--each cart entering the city was obligated to turn over three rocks weighing five pounds or more at the gates. And a ship which came into port had to deliver from 10 to 13 rocks, each no less than 10 pounds. In several places they proceeded to build embankments along the shores but the ground proved to be marshy and swampy and the work had to be stopped.

Since that time dozens of plans have been proposed. They may be divided into groups. The first suggested raising the area by means of fill. In our time this method is suitable only for new rayons. At present all structures in Leningrad and its environs are erected by taking into consideration the high water levels that have been observed. Housing units on the north and south banks of the Neva, for example, are laid out at the 3 to 3.22 meter mark.

The second asserted that the shores must be fortified by earth embankments and dams. The third was based on an erroneous theory as if the reason for the floods lay in the flow of the Neva's water being held up by the opposing westerly wind. The construction of dikes with sluices at the source of the Neva seemed the way out to them. Some could even be found who proposed moving the river to another river bed. But if it had flowed into the Gulf of Finland anywhere in another place there would have been a flood in Leningrad just the same.

P. Bazen's plan, which was developed in 1825, could be called more sound and acceptable. After a destructive flood an international contest was declared for the best method of protecting the city from the water element. Bazen, director of the Petersburg Institute of Engineers of Means of Communication, presented to the court of judges a plan for a barrier dam having a length of about 21 versts which would have dammed the Gulf of Finland from Lis'iy Nos to Oranienbaum. A chamber sluice was provided for allowing ships to pass into the sea channel line. The talented engineer's calculations proved to be unnecessary; the plan was rejected by the tsarist government as were, however, all the rest. But after almost a century and a half he has become of interest to soviet hydraulic engineers who have used Bazen's idea.

In 1967 the Leningrad department of the All Union Order of Lenin Exploratory Design and Scientific Research Institute "Gidroyekt" began developing a barrier against floods for the city on the Neva. In the service record of the department such large structures are being begun as the Sayano-Shushenskoye and Krasnoyarsk hydroelectric stations. More than 50 specialized design, structural, scientific research and other organizations participated in the work on the barrier structures, which was massive in scale. It was necessary to study and give a precise basis for the flooding in the Neva delta and to not disturb the sanitary and hydrologic conditions of the body of water being protected. Many structures and mechanisms were developed for the first time in the practice of hydraulic engineering and transportation construction. Meteorologists alone presented 16 technical reports which contained a sketch of the currents in the Neva bay during the ice free period, the characteristics of the wind and wave conditions in the Gulf of Finland, an analysis of the hydro-meteorological situations that bring about floods in the mouth of the Neva, and other research.

I met with the chief engineer of the design, Sergey Stepanovich Agalakovyy, several days before his 70th birthday. Tall and hale, he appears youthful for his age.

Sergey Stepanovich has a great, interesting life behind him. An honored RSFSR builder, his name has been entered on the board of eternal glory of the Krasnoyarsk GES as the chief engineer of its design. He lived and worked for three years in Ceylon for the United Nations as an expert on hydraulic engineering construction. And even before that, during the war years, he fought against the fascists on the Leningrad front and has battle decorations. And so it happened that he protected Leningrad from the enemy and now from the elements.

A multitude of variations were reviewed. Any water rise in the Neva delta, for example, would not be terrible if the zones that become flooded are protected by dams and high embankments. These areas may also be built up to a mark no lower than five meters. However, this would have led to serious disturbances of the building that has been in Leningrad with respect to its historical, architectural and cultural monuments.

Finally, two variations remained--the eastern and western. Advocates of the first proposed placing barrier structures directly in the mouth of the Neva, providing passage for water and ships through all of its branches and channels. Then the surface sections of the dams would have passed through all of the seaside territory. But such a solution is associated with great difficulties and it makes very great demands on the structures' operation. The small size of the protected body of water is entirely insufficient for accepting even a portion of the Neva's flow.

The western variation is based on placing structures far from Leningrad in the line of direction between Gorskaya-Kronshtadt-Lomonosov. The sizable dimensions of the protected body of water in the Neva bay provides, in this case, much greater maneuverability and operational reliability for the barrier system. In addition, this line is characterized by the best engineering and geological conditions. Work may be done here systematically while not disturbing the development of the city. It is also important that Kronshtadt, Lomonosov, Petrodvorets, and the entire seacoast of the Neva bay will be protected.

Now all arguments are in the past. But not too long ago, furious skirmishes occurred between the advocates of these two variations. Again, again and once again all of the computations were weighted, all those "for" and "against." S. Agalakov and his comrades-in-arms held out calmly, although it cost them their nerves. One of the opponents of the chief engineer of the plan called him after the final solution was already adopted and said that during the period of violent arguments, Sergey Stepanovich displayed great self-control and tact. Such is Agalakov's character--not to lose control of his emotions but to check all of the precise computations. In December 1978 the plan was reviewed and approved by USSR Gosstroy, the USSR State Committee for Science and Technology and other organizations.

How, then, will all of this look in the gulf? The stone and earth structure will extend for more than 25 km. The top of the reinforced concrete wave repelling walls rise eight meters above the normal level. A six-lane highway will be laid on the body of the structures. Kronshtadt will acquire a stable link with the mainland. The possibility of building a beltway around Leningrad will emerge. Beaches, boating centers, tourist bases and cafes can be located at Peter's former military forts. Protective dams that possess high wave negating properties, structures for allowing

sea and river vessels to pass through, openings that allow water to pass through and which, together with the openings for the ships, assure that water will flow into the Neva bay well, underwater motor vehicle tunnels, bridges and bypasses are included in the complex.

The southern gates that allow ships passage will be intended for the navy to pass through while the northern ones will be used by ships on local trips.

Heavy drawbridge-type gates are set in a nonworking position in the spacious dock chambers. As soon as a signal is received from the Kronshtadt desk concerning the approach of a long wave they begin to roll together to meet one another and, having closed, they block its way. A metal segmented gate is automatically put into motion by this same command and after having been lowered along a small arc, it closes the openings that allow water to pass through. If the flood occurs in the winter the gate will break up the ice. The entire system will shut off in 30 minutes with a water level 160 centimeters and higher. There is compulsory testing once per quarter.

The structures will cost our country, certainly, many millions of rubles. These expenditures, as has been calculated, will be compensated for after six years. The general contractor is the USSR Ministry of Power. A specially formed "Leningrad Special Water Power Construction" Administration is building the complex.

What is the scale of construction? More about this in the third letter.

[16 Oct 80 p 4, Part III: "A Step Into the Sea"]

[Text] I was lucky. The other day after my arrival in Leningrad an "express telegram" appeared in the "Leningrad Special Water Power Construction" Administration. It reported: "Comrade Nikitin's completely mechanized crew has started to dig out the approach to the V-6 pit at the Gorskaya site. The start of work has begun for the erection of the principal structures to shield Leningrad from floods." And after some time I also saw the first 500 meters of the complex stepping into the sea and a test pile being driven in.

The administration has not yet been in existence for a year. In the quarters that were allocated to it cosmetic repairs were in full swing, communications people were hooking up telephones, and two technical secretaries were ironing and hanging window curtains. I was not able to meet with the director of "Leningrad Special Water Power Construction," Yuri Konstantinovich Sevenard, who directed the construction of the Nurek GES before this, for which he was awarded the Order of Lenin. Each one of his work days is scheduled literally by the minute. The chief engineer, Aleksey Anatol'yevich Boldyrev had difficulty finding time for a conversation. He is not yet 50 but he has managed to do much. He erected the Asuan and Saratov GES and was the director of construction at the KamAZ [Kamsk Motor Vehicle Plant] foundry complex. He received the highest award of the motherland for the last structure. He is a hereditary hydraulic engineer--his father raised the Kegums GES in Latvia from the ruins during the post-war years. Boldyrev is dashing, smart, and slightly ironical. He speaks quickly, to the point of the matter, clearly stating his sentences. You feel in him an inner culture, great learning and solid professional experience.

In order to protect Leningrad from floods 35 million cubic meters of earth, 5 million cubic meters of rock, approximately the same amount of gravel and other building materials, and 2 million cubic meters of reinforced concrete need to be laid, and several million cubic meters of earth need to be excavated from the bottom of the gulf to form deep water sea routes.... And these are only the basic figures.

At present the work is unfolding, and approximately 100,000 rubles are being assimilated every day. As Boldyrev said, "Deployment is being achieved." The construction was announced by the All Union Shock Komsomol. In time, 10,000 people will be engaged in building the complex. It seems as if that is not so many. But one must consider that a very high level of mechanization is planned here. More than 50 subcontract organizations are participating in the construction.

"The specific nature of construction," explained Aleksey Anatol'yevich, "lies in the fact that almost all of the work must be carried out on the open sea. Here the wind and waves must be countervailed. The second feature is the large volume of work that needs to be done by the navy. We will have more than 100 tugboats, barges, floating cranes and other specialized units."

There is yet another complication. In truth it is in the planning end. The work is intended to be carried out simultaneously in five pits. This has never before occurred in the world practice of hydraulic engineering construction. Working in a single pit is more convenient and easier. But in the words of Boldyrev, "You go around like a watchdog and see that the temporary bulkhead is not washed away." But in return five pits sharply accelerate the pace of construction.

At present an entrance into the sea is being made at the site and the grounds are being prepared for various industrial bases. It is necessary to deposit several million cubic meters of soil in order to obtain the space.

...During the second half of the day we drove to the Gorskaya site which is located about 30 km from Leningrad. The black "Volga" took us easily to the suburbs; the red and yellow autumn woods gleamed. We flashed by Lisiy Nos station, which is quickly being developed in conjunction with the construction of the barrier complex. An additional railroad spur is being laid out here.

And here is the construction site. The low bank, covered with stunted grass, bears the dampness from the gulf; one of Peter's forts is perceptible through the haze. In good weather Kotlin Island with Kronshtadt is visible from here by which construction workers orient themselves.

I went along the embankment which stretched out to sea and felt the excitement--no matter how you look at it these were the first meters of a unique complex. The toneless blows of a two-ton "ram" faded in the air--a test pile was being driven. People stood around, watched, and were talking quietly. The piles are metal beams approximately 10 meters long. They serve as an anti-seepage screen. Encircling, in a way, the underwater portion of the structure, they will begin to check the flow of ground water. In all, 95,000 tons of heavy piles have to be driven in. This is an astronomical figure, explained Boldyrev. The test pile will show much. The fact of the matter is that under the soft sand in these places a rare stable geological deposit is concealed--namely morainic. It should clarify which method of driving to select.

Then I visited a planning session at SMU-1 [Construction and Installation Administration-1] which is headed by Yuriy Dmitriyevich Alisov, a specialist in deep water work. The administration's office is located two steps from the Gorskaya railroad station in a small two-story wooden house. A plan of the entire complex is on a wall in a small office. Having glanced at it you once again understand the uniqueness and size of the structure.

I managed to speak a little with Alisov before the beginning of the planning session. The bustle about him is more than enough. Preparations are being made for winter, it is necessary for there to be a heat, electric and water supply, and roofs overhead. One concrete plant is already in operation and the foundation is being laid for a second more powerful one. A mechanization base and a temporary boiler are being built and a small town with everyday services is being erected. The site must be secured against the floods that are possible at this time of the year. It is time to begin making hydraulic deposits for the core of the 11th dam. In a word, just get going.

The planning session continued for about an hour but the majority of the most diverse problems were solved. I followed Boldyrev, who was directing the conversation, with interest. His great experience and accurate knowledge of affairs allowed him to solve this or that problem seemingly with ease. But the chief engineer suppressed no one with his authority and each was able to express himself as he felt necessary. The only requirement of the speaker was to speak succinctly, to the point and with a specific proposal. Only once did Aleksey Anatol'yevich politely but firmly ask one of the specialists not to submit problems for discussion which are not at all difficult for him to solve himself. I want to bring up only two of his remarks which were made in his usual almost ironic manner. "Roads are not needed for cross-country vehicles but for regular vehicles. I will test them with the 'Volga.'" Or: "Lay the pipes and metal articles faster which were expertly laid together along the road. You will not pull them out during the winter."

Yes, it is time for the day's agenda--questions that are typical for the beginning of construction. Lighting must be provided at the site, and three times the normal amount of blades for excavators, electrodes, propane and acetylene must be stored up,...

Sometime not too soon the dressed-up construction workers will accept congratulations in connection with the start of operations at the barrier structures. But this day, one of the most solemn and festive in their lives, must come. A dependable barrier is rising in the Gulf of Finland which will protect the cradle of the revolution, the city of Lenin, the hero city, the city of museums, the worker city from floods. All Soviet people desire this.

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METALWORKING EQUIPMENT

MINISTER I. PUDKOV INTERVIEW ON MACHINE BUILDING

Moscow NEDELYA in Russian No 36, 1980 pp 2-3

[Interview with I. Pudkov, USSR minister of Machine Building for Light and Food Industry and Household Appliances by NEDELYA correspondent N. Kudryashov]

[Text] Speaking at the solemn meeting at Alma-Ata, dedicated to the Sixtieth Anniversary of the Kazakh SSR and the Kazakhstan Communist Party, Leonid Il'ich Brezhnev stressed that the modernization of the basic sectors of industry must be the core of further economic and social development. He named machine building among these "basic" sectors. Our today's "Dialog with a Minister" is about problems faced by those who create machines for the light and food industry, what results will the sector come to the Twenty-sixth party congress with and what does it propose for the Eleventh Five-Year Plan.

[Question] First of all, Ivan Ivanovich, I would like to ask you to share with us your thoughts in connection with the recent decree of the CPSU Central Committee and the USSR Council of Ministers on the accelerated development of machine building for the light and food industry and a considerable increase in the standard of equipment produced by the industrial sector. What importance does this document have for the industrial sector?

[Answer] It is impossible to overrate its importance. In a few words: it gives a new impulse to the development of the entire industrial sector and raises it to a new stage. I would say, to a stage corresponding to the demands of the time, the demands of the Soviet consumer which he can rightfully present to all production facilities that manufacture mass consumer goods. We must take the most urgent measures to increase considerably the technical standard and quality of the technological equipment of enterprises producing consumer goods.

[Question] What are the scales of the industrial sector that you head?

[Answer] To enumerate everything that we produce will very likely take more than several pages of the weekly. The list contains over five thousand items of various machines, apparatus, units; briefly, technological equipment which we provide to over sixty industrial sectors of the national economy. Moreover,

we produce a fairly wide range of consumer goods -- seventeen hundred items. Even by reading this number of NEDELYA, you are becoming acquainted with our product: it was typeset on machines made by the ministry enterprises.

Of course, a wide assortment of products is by no means a goal in itself, but is rather a necessity. This is a kind of mirror for consumer demands which become more and more diverse. We, with our technology, machine tools and equipment, must not only satisfy such demands, but also foresee their happening. In this, I see, primarily, the meaning of the operation of our industry. This is the problem that is predetermined by the social policy of our party, -- first of all, of satisfying the growing requirements of consumers. If, however, you would like to become acquainted with all our novelties, this will not be too difficult to accomplish...

[Question] How?...

[Answer] In the fall, the USSR VDNKh [Exhibition of Achievements of the National Economy] will show a "Minlegprishchemash-80" exhibit, where the newest design developments and series produced equipment created in the last five years will be widely represented. This exhibition is our report to the coming Twenty-sixth party congress and it most fully reflects the results of the entire industrial sector in recent years.

Of course, we also have our own difficulties and our own problems as does any other business. We must say that the problems of the technical standard and quality of equipment for the canning industry, for mills and elevators are acute. Some machines and units lag behind the level of world models. Finally, one of our biggest problems is the shortcomings in the development and production of packaging equipment which, of course, is most acutely felt by any customer.

[Question] Is there anything common to all these thousands of machines created for various production facilities?

[Answer] Yes, there is. Most generally we can state that we strive to develop equipment that would make it possible to increase the productivity of labor and would utilize raw material more efficiently. Here are several examples. Entirely new principles in transforming fibers into yarn and making fabrics are at the basis of spindleless spinning machines and pneumatic automatic looms that increase the productivity of labor two to three times. In this case, the idea came from theoreticians and designers.

But it also happens in a different way -- the idea comes from the consumer. For example, our customer unexpectedly began to prefer small fifty to sixty gram rolls and loaves. Previously, it took fifty persons to form and bake one ton of such rolls (for comparison: it took only five persons to bake a ton of French bread). Of course, bread factories are reluctant to deal with such "trifles." The problem was solved by a special flow-line which produces seven thousand rolls per hour.

Truthfully, I will note that such consumer requirements are not always rapidly noticed by our machine builders. This occurred with reeling machines for sewing threads which predetermined to a certain extent their scarcity to a certain extent. At present, the Kamenskiy Machine Building Plant began producing new NM-45 thread machines that meet consumer requirements. In my opinion, an example of a line for putting together books is of interest. Together with the GDR printing industry workers, we developed an automatic "Kniga" line. It selects pages, stitches them, glues them, puts them between covers -- and thus forty books per minute are produced.

Or an order of a different kind. Fall arrives and beets are brought to sugar plants and they cannot be kept over the winter. They must be processed very rapidly. This requires installations of large unit capacities. They were created and they process six thousand tons of beets per day!

As you can see, the premises for creating this equipment were different. But everywhere these machines increased the efficiency of production -- and this is the main thing.

I will note another important feature of our industrial sector: fairly rigid social requirements of the equipment we produce. In fact, we service mass production sectors where basically women work. Therefore, any machine tool, unit or line we make must be easy to handle, convenient and yet highly efficient. Moreover, we must also take into account the fact that our equipment frequently operates in a corrosive medium. This applies to many machines for the food industry, tanning, painting equipment, etc.

What about noise and vibration? That which is permitted, say, in a metallurgical plant shop is entirely unthinkable in a confectionary shop, a sewing factory or in an everyday services shop.

Briefly, as you may see, our designers and production people must solve very complex problems. By the way, to develop, say, a modern weaving machine tool -- is a problem not less and, perhaps, more complicated than to develop the next "zhiguli" model. But a motor vehicle, as it is said, is on view by everyone, while our equipment is familiar only to those who work on it... Here you, for example, probably do not even know about an automatic line for making one hundred pairs of shoes per hour?

[Answer] In fact, I do not...

[Answer] Yet, it contains the very latest achievements of domestic and world machine building! There is no such equipment abroad. This line is being eagerly purchased by firms in a number of foreign countries.

[Question] Speaking of special production features, you, Ivan Ivanovich, stressed that frequently the initial impulse is provided by the consumer. In other words, there not only exists a direct connection between the equipment that you make and its consumer but also a feedback. But, say, the styles changed -- the consumer needs cloth for jeans or a "Safari" type of cloth; men began wearing shoes with high heels and prefer umbrellas to raincoats. How

does your industrial sector react to these "whims?" In fact, it is no secret that light industry is frequently blamed for lagging behind the style, blaming machine builders who still have not developed machines capable of producing this or another article in series... Obviously, they are not always wrong when they respond this way?

[Answer] This is a complex question and it cannot be answered in a few words. Actually, light industry doesn't always catch up with fashion and this is partially our fault. Much is being done to change this situation. We must say that NEDELYA has many times called attention to the fact that the looks of our shoes lag behind fashion. But already today -- and you must concede that although things are not quite as good as one would desire, -- the situation has changed considerably: shoes have become more modern, more stylish and elegant.

All this does not mean, of course, that everything is in good shape. No, as before we are in debt to light industry and to the consumer. Regrettably, a considerable part of the production operations at tanning and leather enterprises is still done manually. In this five-year plan period, the Minlegpishchemash industries began the production of only eleven of the twenty-one kinds of machines that they were called upon to produce. The reason was that a number of enterprises in our industrial sector are slow to assimilate novelties. For example, in ten years, the Yeletskiy Machine Building Plant has been unable to organize series production of planer machines for manufacturing split hides -- a valuable semifinished product in the leather industry. Both designers and planners are at fault. Until now, say, new apparatus for liquid products in the production of leather still have not been developed. Yet, it is precisely these processes that determine the quality of the final product. Although these problems are very complex, they can be solved and they were at the center of attention at the ministry.

True, when they speak of quality and about following fashion strictly much depends on us. But not everything. The raw materials must be of proper quality. We will provide the machines for tanning and dressing leather, but the leather itself must meet high requirements.

On the other hand, the solution of problems of quality and fashion depends also on those who manufacture fabrics, make shoes and prepare foods. Thus, the raw materials, the machines and the finished product -- these are a three-link system that must develop comprehensively, assuring a close cooperation between the links.

Moreover, I would like to note that, in general, the standard of machines that we produce today makes it possible to follow fashion trends. In designing the equipment, we strive to make it flexible, and adaptable to possible changes; we modernize outdated equipment and, finally, simply replace it. Of course, it is possible that something entirely new may appear, some new in principle kind of material or product. In that case, it is necessary to develop absolutely original equipment. Say, scientists proposed a method for obtaining artificial granulated caviar -- it would be necessary to develop special equipment. Or still another novelty -- apparatus for recovering valuable proteins from

agricultural products and industrial production which have not been used traditionally.

[Question] You already stated, Ivan Ivanovich, that the industrial sector produces equipment not only for plants and factories, but also for the home and family. I would like to ask you to tell us what is the situation with the output of home appliances -- vacuum cleaners, refrigerators and washing machines.

[Answer] You can add to this list floor polishers, electric razors, freezers, coffee makers, i.e., all those machines that determines our industrial sector as machine building for millions of people.

By the way, "for millions" -- this is about today. Because in those years when our industrial sector was only being created, we lagged sharply in the production of refrigerators, vacuum cleaners, washing machines and other home appliances. But look how fast we made up for it. Compare -- fifteen years ago only eleven of one hundred families had refrigerators. This year, the number must be close to eighty-four.

Today, we can say -- the market is saturated. Now, the problem of quality, newness and fashion are of the greatest importance as they should be. For example, freezer compartments, where the temperature is maintained constantly down to minus eighteen degrees, are becoming very popular. They are useful for families that buy commodities for long periods. Or, say, there seems to be nothing now that would surprise coffee makers. However, having solved a number of complex engineering problems, L'vov designers made a porcelain coffee maker. It is sold along with a set of porcelain cups. It is in very great demand.

Regrettably, we cannot always meet the demands of commerce and consumers for certain goods. Thus, it is difficult to buy a domestic sewing machine even in such large centers as Moscow and Leningrad. The Podol'skiy Machine Plant imeni M. I. Kalinin increases the output of these machines every year. But we cannot solve this serious problem without considerable expansion of production capacities or without creating a new enterprise.

We cannot always satisfy the demands of customers for quality household appliances. Of course, the basic reason for this is the poor design standard of these products. But there is another reason that does not depend on us -- to produce high quality goods it is necessary to have a sufficient quantity of high quality raw and other materials.

[Question] Please, tell us in greater detail about refrigerators -- where are they "going?" This question interests many readers, in particular, A. D'yachenko from Kaluga, Ye. Ivanova from Pskov and L. Bolyanskaya from Yurmäl.

[Answer] First, their capacity will increase considerably (to three hundred to five hundred cubic decimeters). The number of freezer compartments will increase from one to two or several with a temperature of minus twelve to minus eighteen degrees centigrade. Automatic or semiautomatic devices for making ice water will become common. Left or right side door openings will be provided, as well as switching from a freezing to a storage mode, etc. Finally, the types of refrigerators will become more numerous. There will appear tourist refrigerators, table refrigerators, thermostats for storing ready-made foods or storing vegetables and fruit during the fall-winter period.

[Question] What home novelties can we expect in the near future?

[Answer] A mangle. Obviously, it will eventually replace the electric iron. Or, more precisely, supplement it. The pressure of the ironing block of the machine will be mechanized, the temperature and speed of ironing regulated, and it will select automatically the operating mode depending on the kind of the fabric. An interesting novelty will be a dryer with electronic control of the drying process.

I have no doubt that such small things as an indicator that the vacuum cleaner bag is full, an air consumption regulator and a unit for winding the cord will be very attractive to everybody who wants to get a new vacuum cleaner brand. Other new similar devices are being assimilated -- rug cleaners, rod vacuum cleaners, devices for cleaning walls and windows. Multifunction units; "combines," will also be developed to remove dust, humidify the air, polish floors and wash them.

[Question] Here is the last question. The industrial sector that you head is completing the five-year plan period. What are the results?

[Answer] The production potential continues to grow rapidly. It must increase by thirty-two percent by the end of this year. The changeover is being completed from producing individual units and machine tools to the production of highly efficient machine systems for the automation and mechanization of production in the light and the food industry. Production associations and plants as a whole are coping with these problems.

We thank Ivan Ivanovich Pudkov for his interesting description of the activity of the industrial sector he heads and ask our readers as follows:

What heads of ministries or departments would you like to meet in the pages of NEDELYA: What should they be asked? We await your letters.

Economic Department of NEDELYA

2291

CSO: 1821

METALWORKING EQUIPMENT

FIRST DEPUTY CHAIRMAN OF USSR GOSPLAN ON MACHINE BUILDING GOALS

Moscow *SOCIALISTICHESKAYA INDUSTRIYA* in Russian 28 Sep 80 p 2

[Article by N. Ryzhkov, first deputy chairman of the USSR Gosplan: "The Core of Industry"]

[Text] The celebration of Machine Builder's Day this year is occurring under conditions of great labor and political activity. Machine builders along with the entire people are getting ready to meet the 26th party congress in a deserving manner. How is this getting ready being expressed? First of all, in coping successfully with the tasks of the final year of the Tenth Five-Year Plan period and laying a strong foundation for fulfilling the plans of the coming Eleventh Five-Year Plan. It must be stated that hundreds of collectives are meeting their holiday with remarkable achievements.

The party has given and gives their greatest attention to the development of machine building at all stages of socialist construction. Machine builders are well aware that technical progress in all sectors of the national economy, depends on their efforts and on the standard and quality of the products they manufacture. Only by having a powerful machine building base is it possible to achieve the systematic implementation of the reequipping of enterprises and, on that basis, have a steady increase in the productivity of labor and provide the country most fully with production facilities and consumer goods.

The role of machine building is increasing especially in our day. Already, the range of problems that must be solved in the Eleventh Five-Year Plan period is clear. As indicated in the speech by Comrade L. I. Brezhnev at Alma-Ata, the modernization of the basic sectors of industry -- power, metallurgy, machine building, chemistry and transport, must be the core of further economic and social development.

To machine builders, this means, first of all, further progress in developing equipment of higher unit capacity, especially for industrial sectors that manufacture a great number of similar products. Great attention should be given to developing and assimilating new in principle equipment that would make it possible to increase labor productivity by several times; to completing the changeover from individual machines to making systems and complexes for the full mechanization and automation of the most important production processes. The importance of power-saving and material-saving technologies that provide for the comprehensive utilization of the initial raw material also becomes much greater.

Domestic machine building occupies second place in the world in the volume of production, while solidly holding first place in the output of diesels, electric locomotives, metal-cutting machine tools, tractors, agricultural machines and other very important products. The success of this industrial sector is characterized not only by the increase in the volume of production, but also by the assimilation of new machines that frequently have no analogs in machine building abroad. As an example, a special design 1,200,000 kw power unit and a hydraulic turbine with a 640,000 kw generator may be cited.

Nuclear machine building is developing at an accelerated rate. During the current five-year plan period, the capacities and output of equipment for nuclear power plants has more than doubled, and the production of fast neutron reactors was organized. The introduction in the national economy of progressive power and electrotechnical equipment will make it possible to save over ten million tons of conventional fuel this year alone as compared to 1975.

Significant achievements were also made in metallurgical machine building. Powerful continuous steel casting installations made by the Uralmashgavod operate stably at the Novolipetsk Metallurgical Plant and "Azovstal'." Pipe rolling and pipe welding mills, placed in operation in the Tenth Five-Year Plan period, have better characteristics than similar units made abroad. This is to the credit of the Main Institute of Metallurgical Machine Building, the VNIIMetmash, and the Elektrostal'skiy Heavy Machine Building Plant. Also, the automated mill put in operation at the Dneprovsk Metallurgical Plant imeni Dzerzhinskiy made it possible to roll car axles with minimal tolerances for machining for the first time in world practice.

Chemical machine building concentrated on the development of high unit capacity machines, especially for large-tonnage production of weak nitric acid, ammonium and ethylene. This makes it possible to increase the productivity of labor by two to four times, reduce production costs by fifteen to thirty percent and reduce to about an eighth the electric power consumption. It is also quite important that the Minkhimmash [Ministry of Chemical and Petroleum Machine Building] paid special attention to increasing the state of the prefabrication of equipment. In the current five-year plan period alone, this industrial sector increased by 1.8 times the delivery volume of complete technological lines, installations and units. As compared to incomplete set deliveries, this will make it possible to reduce the installation work at the construction sites by almost forty percent. As is well known, this initiative was approved by the Central Committee of the party.

Transport machine building is developing. New engines with modern two-section 8000 horsepower diesels are being built for RRs, as are special and specialized cars. Container and packet transport, whose volume increased by several times, are of great importance in raising the mechanization level in transportation. Calculations show that the delivery of one million tons of freight in containers makes it possible to free up to 1500 persons from materials handling work and reduce operating costs by over ten million rubles.

Machine builders are devoting great attention to the reequipment of agriculture. In this five-year plan period, the production of over two hundred new types of agricultural machinery will be organized. The output of tractor-mounted and trailer tools for high power tractors will increase by 1.9 times. This will make it possible to implement the complete mechanization of the basic processes of cultivating, harvesting and the post harvest processing of grain, rice, sugar beets, cotton, sunflowers, corn, potatoes and flax.

Significant advances were made in all sectors of machine building. Many new machines were developed in heavy construction machine building, the electro-technical industry, instrument building, machine building for animal husbandry and feed production, and for the light and food industry. It is difficult, of course, to enumerate everything. Suffice it to say that in the current five-year plan period, over seventeen thousand models of various machines, devices and equipment will be assimilated, while a large number of outdated models was removed from production.

While reequipping other industrial sectors, machine building is also reequipping itself. The course on mechanization and automation of production on the basis of progressive technological processes was clearly defined. For the past ten years, the number of automatic lines increased four-fold, while comprehensively mechanized and automated sections and shops -- tripled. Equipment with programmed control is being used on a large scale. Realistic premises appeared for creating shops and plants equipped with machine tools with computer controlled ChPU [Numerical programmed control]. Production of other progressive metal-working equipment is also increasing. The output of special and unit head machine tools, and the ratio of forging-press machines will increase. The industry will receive 1.8 times more forging-press automatic machines and automatic lines than in the previous period.

The technical standard and quality of machine building products has improved considerably. Over twelve thousand models of machines, equipment and devices now carry the government emblem of quality. The ratio of the highest category of quality in the total volume of production in machine building as a whole will almost double and reach thirty-six percent by the end of the five-year plan period. Life has shown that the certification of quality by categories, and the evaluation of tasks by the output of the highest category of quality justified itself fully.

Thus, machine builders accumulated good reserves for solving future problems. We have, therefore, more reasons for giving the most serious attention to the shortcomings that retard our further progress.

Recently, the Central Committee of the party and the USSR Council of Ministers issued a number of decrees which stressed the considerable shortcomings in the development of machine building, as well as the activity of individual ministries. In particular, it was established that the design and quality of the metal-working equipment produced by the enterprises of the Minstankoprom [Ministry of the Machine Tool and Tool Building Industry] are far from meeting fully the problems of introducing advanced technological processes to obtain the maximum increase in the productivity of labor, an increase in the coefficient of metal utilization and an improvement in the product quality.

Low-waste technology is not being used widely enough in machine building. On one hand, this is due to a shortage of equipment and, on the other hand, to the inertia of some industrial, production association and enterprise managers. Yet, other experience is available: it is sufficient to cite the results of the economic activity of the "Avtozil" Association.

At present, the metal consumed by the machines and equipment produced is still high. This applies especially to certain models of tractors, overhead cranes, motor vehicles, forging-press equipment and other equipment. Several sectors of machine building have poor power saving technological processes, while the machines produced consume unjustifiably high amounts of fuel.

Much was done in recent years to mechanize and automate production. Nevertheless, there are no bases for satisfaction so far. We have no right to forget that over seven million persons are occupied with materials handling, with half of them working manually. The creation of the necessary equipment for them is an obligation of all machine builders to the national economy.

An acute problem today is organizing the production of automatic manipulators, especially of industrial robots with programmed control. Over twenty-seven hundred robots will be manufactured by our industry in the Tenth Five-Year Plan period. However, a serious lag has been permitted in this area. It is not by accident that the decree of the Central Committee of the party criticized sharply the Minstanoprom, the Ministry of Heavy, Power and Transport Machine Building, the Minkhimmash, the Ministry of Electric Equipment Industry and the Ministry of Instrument Making, Automation Equipment and Control Systems, who were at fault in not fulfilling the set tasks.

Concrete measures are outlined at present for eliminating the shortcomings. But their realization will depend greatly on well-thought-out solutions, persistence, continuity of industrial staffs and local initiative -- in the collectives of associations and enterprises. It is well known that even the best plans remain good intentions if they are not supported by everyday organizational work.

The twenty-sixth party congress is coming close. It will adopt the program for the further development of the national economy in the Eleventh Five-Year Plan. We have no doubt that machine builders will make a worthy contribution in its implementation, as always, and will be in the vanguard of the competitors.

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METALWORKING EQUIPMENT

MACHINE TOOLS WITH PROGRAMMED CONTROL DISCUSSED

Moscow TRUD in Russian 23 Aug 80 p 2

[Article by A. I. Kostousov, USSR Minister of Machine Tool and Tool Building Industry: "Machine Tools with Programmed Control"]

[Text] The broad comprehensive program of scientific-technological progress and the development of all machine building sectors, including machine tool building, was determined by the decrees of the Twenty-fourth and Twenty-fifth party congresses. In accordance with this program, the process of creating and assimilating new types of machine tools and other equipment was accelerated and plans for introducing new equipment are being implemented. Productivity, control automation, precision and the reliability of the equipment are being increased. The productivity of the equipment increased 1.3 to 1.8 times on the average.

This year the output of automatic and semiautomatic lines will increase by 1.5 times (as compared to 1975).

It is planned to advance the output of forging-press machines and casting equipment as compared to metal-cutting machine tools. This will permit the development of a low-waste technology base and make it possible to achieve considerable saving of metal.

One special feature in developing the production of metalworking equipment in recent years is the broad changeover to developing and producing machine tools and machines with numerical programmed control (ChPU). Their annual output increased by 1.6 times in the last five years. These machine tools are the basic type of equipment intended to mechanize and automate series and small-series diverse production which has changed manual labor radically. How the boundaries between intellectual and manual labor are being erased is shown graphically by machine tools with ChPU. The output of these machine tools has more than doubled on the average. It should be noted that in machining the most complex parts, this indicator increases by more than six times as compared to machining them on universal equipment.

Of great importance is the development of a special series of machine tools and machines made on the basis of basic models. In 1974, for example, a series of

drilling-milling-boring machine tools with ChPU was developed and manufactured designed of typical units with table widths of two hundred fifty, four hundred and six hundred thirty mm. The work was done at the following plants: The Odessa imeni Twenty-fifth party congress, the Vilnius "Zhal'giris" and the Vitebsk imeni Kirov. The new machine tools have a productivity 1.7 times higher than previously made machine tools.

When necessary, the machine tools are made in the form of modules. Besides the machine tool itself, these also include units for the automatic loading-unloading of intermediate products, parts and tools; transport; receiving and transferring mechanisms; shops controlled by a central computer may be assembled with such modules and, in the future, they may be used to create fully automated production facilities. A prototype of such a module was created by the Ivanovskiy Machine Tool Plant and is in experimental operation.

The "Krasnyy Proletariy," Srednevolzhskiy and Ryazanskii plants began producing turning machine tools equipped with ChPU systems which are designed on the microcomputer basis. These systems make it possible to set the machining program of the part directly by the control panel of the machine tool. In the next five-year plan period, it is proposed to organize wide production of such units. A thousand machine tools with ChPU save twelve to fifteen million rubles annually. They replace twenty-five hundred universal machine tools, make it possible to free conditionally twenty-five hundred workers, reduce the production area and lower capital investments by a minimum of 1.5 million rubles.

The output of machine tools with ChPU in the current five-year plan period will be increased considerably.

But the matter involves not only volumes of output. The number of kinds of machine tools with ChPU is being expanded and their technical standard is being increased considerably. Machine tools with automatic tool change and multioperational machine tools with tool feeder bins have been assimilated. In 1980, their output will be about half the total output of machine tools with ChPU.

The output of machine tools with ChPU of high and especially high precision was assimilated, as well as of electro-physio-chemical and laser machine tools with ChPU.

In the Tenth Five-Year Plan period, further development work was done on creating comprehensively-automated pilot sections of machine tools with computer-controlled ChPU. An automated system for the technical preparation of production for such sections was developed. This system makes it possible to reduce the laboriousness of program preparation by three to four times.

In 1980, all enterprises and organizations of this industrial sector must implement large measures in accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers "On a considerable increase in the technical standard and competitiveness of metal-working, casting and wood-working equipment and tools." This decree determines the scientific-technological

directions and rates of the economic development of the machine tool and tool building industry for the following five-year plan period.

During these years, it is planned to create and assimilate new highly productive equipment for all technological processes of machine building. This will make it possible to increase the output of machine building and metal-working without increasing the number of workers.

There is no doubt that the workers of this industry will apply all their forces to the successful fulfillment of the planned tasks for the current year and will meet the twenty-sixth party congress suitably.

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METALWORKING EQUIPMENT

MACHINE BUILDING GOALS DETAILED

Vilnius SOVETSKAYA LITVA in Russian 16 Aug 80 p 4

[Article by A. Kostousov, USSR minister of the Machine Tool and Tool Building Industry]

[Text] The high rating of machine tool building as the core of machine building is generally acknowledged. Machine tool building, as was stressed at the twenty-fifth party congress, plays a key role in raising the efficiency of machine building and, all things considered, in the national economy as a whole.

At present, Soviet machine tool building is a powerful, developed and diverse sector of industry capable of producing considerable amounts of high quality metal-cutting machine tools, forging-press and woodworking equipment, and a wide range of metal-cutting, abrasive, diamond tools, technological equipment and monitoring-measuring devices.

In accordance with the directives of the twenty-fifth party congress, forging-press and casting machine building is being developed at advanced rates in the Tenth Five-Year Plan period. To date, during this period, the national economy was supplied with one hundred thousand ninety-two forging-press machines, including over fifteen hundred of them with numerical programmed control, and about eighteen thousand automatic machines. The output of casting equipment, primarily automated for precise intermediate products, will increase by seventy-five percent during the five-year plan period. There is considerable improvement in the production structure of metal-cutting machine tools. In five years, the country will obtain over a million of them, more than half of them automatic and semiautomatic machines, and over thirty thousand machine tools with ChPU [Numerical programmed control]. Moreover, the national economy will be supplied with about twenty-seven hundred sets of equipment and automatic lines for various technological purposes. The average annual rate of increase in the output of machine tool building will be 8.8 percent, while the productivity of labor during the five-year plan period will increase by thirty-five percent.

Machine tool builders do a large amount of systematic work on renovating the output. In the Tenth Five-Year Plan period, over eleven hundred new models of highly productive metal-cutting machine tools, three hundred fifty models of forging-press and one hundred sixty models of casting equipment were put in

production. Tool builders assimilated the output of over fourteen hundred new kinds of tools. The new machines have considerably improved technical characteristics, while their operating time until the first capital repairs increased from seven to ten years. A great amount of work was done on increasing the quality of the products. By the end of 1980, the ratio of products with the emblem of quality for the industry as a whole will reach forty percent as compared to 7.6 in 1975.

Lithuanian machine tool builders made a considerable contribution to domestic metal-cutting and tool industry. At present, Lithuania occupies fourth place in the country in output of metal-cutting machine tools. It produces about thirty thousand machine tools annually.

The republic has a powerful scientific-production complex of machine tool building industry consisting of eighteen enterprises and organizations that produce nine technological groups of machine tools, a wide variety of drills and castings for machine tool building as well as other industrial sectors; hydraulic apparatus for machine tools, fastenings and other products. Lithuania produces about thirty-eight percent of all jig-boring machine tools, fifteen percent of milling tools and about thirteen percent of gear-milling machine tools produced by the USSR Minstankoprom [Ministry of Machine Tool and Tool Building Industry].

With the help of fraternal republics, the collectives of plants, scientific and planning-design organizations of Lithuania did great amounts of work to raise the technical standard, quality and reliability of the output. The output of seventy models of new, more progressive metalworking equipment with high technical characteristics and technological possibilities has been assimilated. These include electric-erosion and jig-grinding machine tools made by the Kaunas Plant imeni F. Dzerzhinskiy, drilling-milling-boring machine tools with ChPU made by the "Zhal'giris" Plant, milling with ChPU and diamond-boring machine tools bearing the "Komunaras" brand, jig-measuring machines made by the Vilnius branch of the ENIMS [Experimental Scientific Research Institute of Metal-Cutting Machine Tools of the Order of the Labor Red Banner] and others.

A considerable part of these products were assimilated in the Soviet Union for the first time, which not only made it possible to eliminate imports, but to organize their supply for export. Machine tools made by the Vilnius "Zal'giris" and "Komunaras" plants and the Kaunas Plant imeni F. Dzerzhinskiy are in the greatest demand abroad. The well-known Swedish Firm "Malkus" stated that the tools made by the Vilnius Drill Plant excel the best international models in quality.

A great amount of work is being done at Lithuanian enterprises to produce products with the emblem of quality. Over half the products manufactured by such enterprises as the Vilnius Drill Plant and the Plant imeni F. Dzerzhinskiy have the emblem of quality. Many plants have won gold medals at international fairs and exhibits. These awards were given to Lithuanian machine tools for their high technical standards, reliability and precision.

All these successes are the result of selfless work by Lithuanian machine tool builders. Many masters of their work and specialists of the highest skill work at these enterprises. In 1946, a youngster in a trade school uniform came to the "Zhal'giris" Plant. Now, Hero of Socialist Labor Vitautas Gelezhauskas -- is the shop chief at this plant. The names of Heroes of Socialist Labor -- Yu. Sikorskis, mechanic of Plant imeni F. Dzerzhinskiy, deputy of the USSR Supreme Soviet; P. Savel'yev, turner of the "Komunaras" Plant; K. Rimkyavichyus, miller of the Vilnius Grinding Machine Tool Plant and other leading production workers are widely known in the industry.

The CPSU Central Committee and the USSR Council of Ministers recently issued a decree defining the new goals of domestic machine tool building. It specifies a radical improvement in the quality of the output, an increase in the technical standard of the equipment, an introduction of progressive technology in machine building and highly efficient methods in the organization of production. The decree also specifies the comprehensive development of the tool building industry and defines measures whose implementation will raise it to a new, higher standard.

Important problems are imposed primarily in the area of precision machine tool building at Lithuanian enterprises. Their detailed discussion at plants, organizations and a republic conference organized by the Central Committee of the Lithuanian Communist Party created a good basis for their successful solution.

The present composition of machine tool building specialization in Lithuania will be preserved in the Eleventh Five-Year Plan period. This will make possible the rapid implementation of the necessary measures on assimilating new products and increasing capacities. Each enterprise was given fairly complex concrete problems that require the implementation of a large complex of organizational-technical measures.

Thus, the "Zhal'giris" Plant must begin the production of precision drilling-milling machine tools with ChPU, a component part of a single series of such machine tools being assimilated by a number of enterprises. The output of the usual milling machine tools at this enterprise must be reduced by 1.5 to two times. The "Komunaras" collective must assimilate a new series of tool building machine tools. The output of machine tools with ChPU at this plant will exceed fifty percent of the total production volume. A new series of gear milling machine tools will be produced at the Plant imeni Fortieth Anniversary of October. The Vilnius Grinding Machine Tool Plant will begin the production of circular grinding machine tools with ChPU suitable for installation in automated sections. Extensive work on changing over to a new improved generation of jig-boring machine tools has begun at the Plant imeni F. Dzerzhinskiy. It is planned to reequip the "Neris" and "Prekalas" plants and organize the production of new products. The Vilnius Drill Plant must organize the industrial production of tools with tougher facings.

These and other problems, involving a considerable increase in technical standards and a necessary increase in the volumes of production, must be solved in a practical manner without increasing the number of workers at machine tool building enterprises in Lithuania.

Their successful implementation may be achieved by a radical improvement in the technology and organization of production on the basis of more extensive specialization and cooperation. This work already began in the Tenth Five-Year Plan period. At the Plant imeni Fortieth Anniversary of October, centralized production of gears was organized and capacities were increased for the production of normalized products; this year the first stage was put in operation for the automated production of housing parts at the "Zhal'giris" Plant and others.

However, this work is still being done extremely slowly. Decisive measures are needed to accelerate implementation plans for the further expansion of centralized production. It is also necessary to implement, in a short time, the program for enterprise reequipment and the introduction of new, highly productive automated equipment. Complex problems, primarily due to the changeover to welded designs and the wider use of intermediate precision products, must be solved to save metal. The Kaunas "Tsentrolit" Plant is called upon to provide considerable help to machine tool builders in this matter. Its collective has accumulated a considerable amount of experience in the production of precise castings.

Machine tool builders of Lithuania are working as shock workers in the final year as in the previous years of the Tenth Five-Year Plan period. They are making a worthy contribution to the development of domestic machine tool building. They fulfilled the plan for seven months surpassing established tasks. Their work was given impetus by the decree of the June (1980) Plenum of the CPSU Central Committee on the convening of the Twenty-sixth party congress. In his report at the plenum, Leonid Il'ich Brezhnev, General Secretary of the CPSU Central Committee, stressed the necessity of applying the maximum energy to fulfill and overfulfill successfully the plan for the final year of the five-year plan, and to provide stable operation of the national economy in 1981 -- the first year of the Eleventh Five-Year Plan. There is no doubt that the machine tool builders of Lithuania, having developed wide socialist competition for a worthy reception of the twenty-sixth party congress, will fulfill with honor the plan established for the five-year plan period and the adopted socialist obligations.

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